Embedded Computers

Ready-to-Run, Reliable, Wide Temperature

Catalog
Vol.71

Wireless/Rackmount/Rugged/DIN-Rail/
Box Computer/Embedded Module

- Power
- Transportation
- POS
- Environmental Monitoring
- Manufacturing Automation
- Medical

MOXA®

www.moxa.com

Core Values

- Integrity
- Mutual Respect
- Customer Focus
- Execution

Vision

To be the world-class leader in industrial-grade device networking solutions for automation.

Mission

- To cultivate customer loyalty by providing value-added service and quality products through a commitment to continual innovation and improvement.
- To encourage a sense of satisfaction and accomplishment from work by providing educational and career advancement opportunities within safe and healthy environments.
- To provide fair and equitable performance-based compensation and share the company's success with our employees.
- To establish mutually beneficial, win-win business relationships with distributors and suppliers based on the principles of trust and integrity.
- To demonstrate good citizenship by conducting educational programs for the betterment of society and working to protect the environment.

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About MOXA

Global market leader in industrial device networking

Well-known companies that use MOXA products include:

- *Siemens Medical*
- *NCR USA*
- *Toshiba*
- *TSMC**
- *China Telco*

* Taiwan Semiconductor Manufacturer Corp., the No. 1 silicon wafer manufacturer in the worldwide industrial market.

MOXA was founded in 1987 to provide serial communication solutions for industrial automation applications. Currently, MOXA designs and manufactures data networking products that provide end-users with reliable and cost-effective serial-to-PC, serial-to-Ethernet, industrial Ethernet, embedded computer, and remote I/O solutions. Since the current trend is to use Ethernet as an overall communications backbone for both business and industry, MOXA concentrates much of its R&D resources on serial-to-Ethernet and Ethernet switch technologies.

The MOXA Group, which was established in 2003, consists of three separate companies—MOXA Technologies, MOXA Networking, and MOXA Systems. MOXA Technologies provides serial-to-PC, serial-to-Ethernet, and remote I/O solutions, MOXA Networking specializes in industrial Ethernet and fiber solutions, and MOXA Systems produces ready-to-run embedded computers.

All products are marketed under the MOXA brand name, which has gained a reputation worldwide as one of the best brands in the industrial communications field.

POS/Retail

Factory Automation

Transportation

Solutions

MOXA's products are used around the world to make industrial and commercial networking applications reliable, rugged, and cost-effective. MOXA's key target markets include Transportation, Factory Automation, POS/Retail, Telecommunications, Power & Energy, and Building Automation.

Telecommunications

Power & Energy

Building Automation

Global Sales Network

Buying products from MOXA is easy. Potential customers can contact MOXA directly at one of our six branch offices in the United States, Germany, China, and Taiwan, or contact one of MOXA's many distributors. The contact information for MOXA's distributors can be found in the "Where to Buy" section of our website at www.moxa.com/where_to_buy.

MOXA's network of distributors spans more than 40 countries around the world. Our distributors form the frontline for sales, and assist us by keeping in close contact with customers who need MOXA's products and services. MOXA's strategy of providing localized sales and service is one of the reasons that our customers enjoy zero lag time for sales and service.

Product Overview

MOXA's products are recognized internationally for their superior design

MOXA's modular Gigabit switch, EDS-726, was awarded the iF Product Design Award for its superior user-friendly, modular design.

MOXA's products have been tested and certified by some or all of the following agencies:

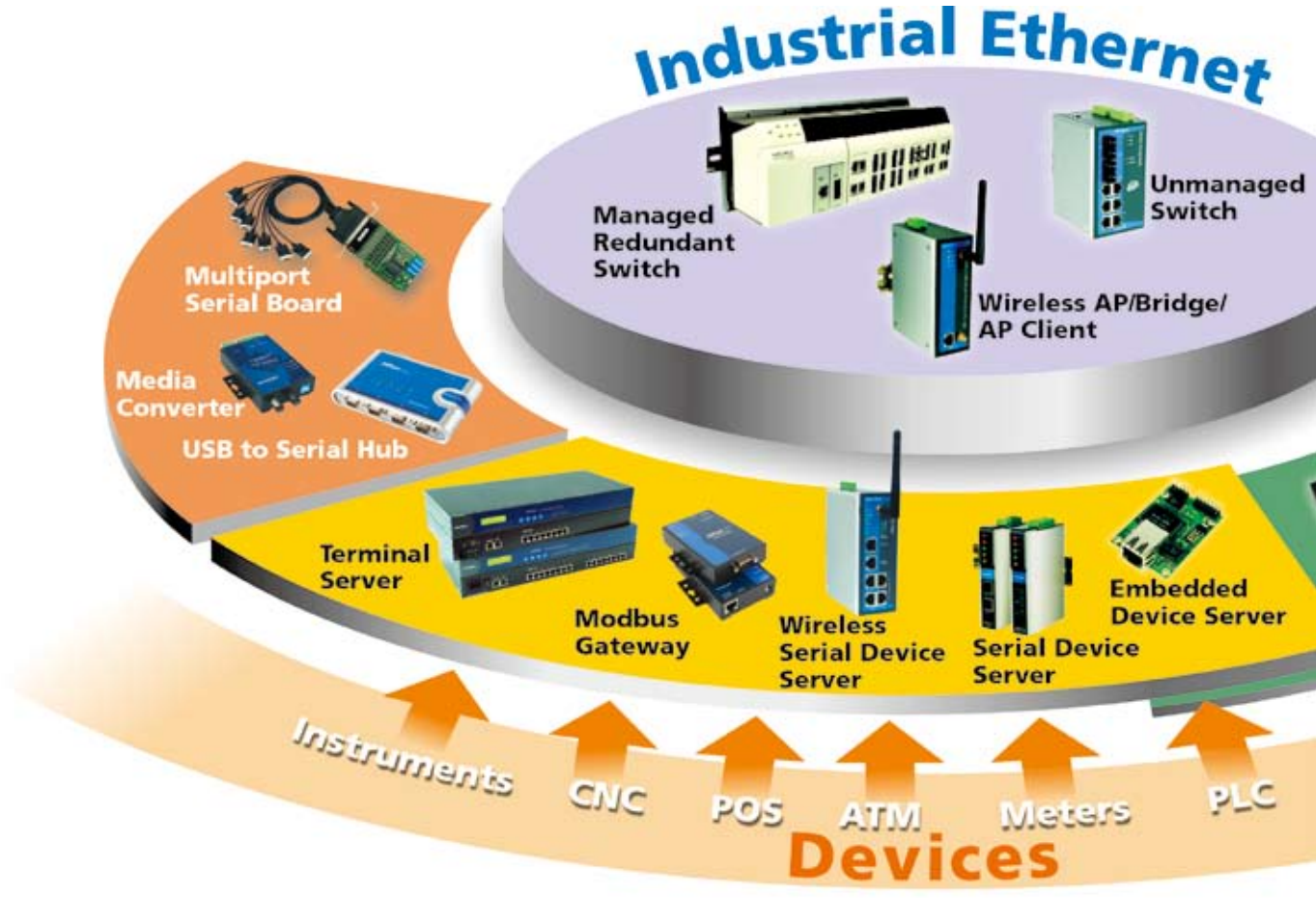
- *FCC*
- *CE*
- *UL/CUL*
- *TÜV*

MOXA products have been used globally for more than 18 years to make industrial and commercial networking applications reliable, rugged, and cost effective. To date, at least 7,000,000 devices have been installed with the aid of MOXA's products.

Product Categories

MOXA provides a comprehensive array of solutions that include:

- **Industrial Ethernet Switches**
- **Serial-to-Ethernet Products**
- **Multiport Serial Boards**
- **Industrial Video Servers**
- **Wireless Ethernet Products**
- **Ethernet I/O Servers**
- **Embedded Computers**
- **Media Converters**
- **USB-to-Serial Converters**



Core Technologies

The MOXA R&D team's expertise spans the many core technologies needed to manufacture highly reliable data communications products:

- Serial communications (RS-232, RS-422, RS-485)
- Industrial Ethernet communications
- Serial-to-Ethernet communications
- Real-time OS
- Communications protocol stacks
- IC design

The MOXA R&D team has developed several key technologies, including a MOXA Operating System, ADDC™ (Automatic Data Direction Control), and Turbo Ring (recovery time < 300 ms), all of which make MOXA's products more reliable, more usable, and more powerful.

Quality Assurance

- ISO 9001:2000
  Research & Development, Manufacturing & Service, Quality product design
- ISO 14001
  Environmental Management System
- 5-year Product Warranty
  Most products carry a 5-year warranty; see MOXA's website for full details

MOXA's Green Products

The European Union's Waste Electrical and Electronic Equipment (WEEE) directive took effect in August of 2005, and the Restriction on Hazardous Substances (RoHS) will be enforced starting in July of 2006.

MOXA's new "green products," which are scheduled for release later this year, satisfy the EU's RoHS and WEEE directives.

Customer Service & Quality

Global service and support network that focuses on just what the customer needs

Great service and top quality are key reasons for the success of MOXA's products. MOXA's commitment to quality is reflected in the fact that the defective rate of our products is less than 0.5%. We are also proud to offer a 5-year warranty on most products.

Technical Support

MOXA's technical support group works closely with our R&D team to help customers solve problems quickly and with satisfactory results. Our technical support engineers use their know-how to maintain an up to date FAQ and glossary of relevant technical terms, both of which can be found on MOXA's website, giving customers the resources needed to perform basic troubleshooting tasks.

RMA Service

You can easily get RMA (Returned Merchandise Authorization) service and trace the status of your returned products online with the MOXA e-RMA system. Our customer service staff makes it a point to provide you with the most friendly and efficient service.

Customer Satisfaction Management

We periodically send out a customer satisfaction questionnaire to all MOXA end-users so that we can better understand what our customers think of MOXA's services and products. With your help, we work continually to improve our support strategy to provide you with better services and products.

MTSC (MOXA Technical Support Certification)

The MOXA Technical Support Certification (MTSC) system was established to guarantee that customers around the world receive the most up to date, on-time assistance with their MOXA products. All MTSC engineers are required to attend regular training sessions, led by MOXA's own technical support experts, and must pass a rigorous battery of tests before being awarded the MTSC seal of approval. To receive assistance from a professional with the most up-to-date knowledge of MOXA's products, contact the MTSC engineer nearest you. A complete list of MTSC engineers is available on MOXA's website at www.moxa.com/support/mtsc_showcase.htm.

Professional User's Manuals

Most of MOXA's products are shipped with a 1-page Quick Installation Guide that gives basic information about the installation and operation of the product. In addition, pdf versions of product user's manuals can be downloaded from MOXA's website. All of MOXA's user's manuals and installation guides are tested by our technical support engineers before the product is released. We take great pride in producing support documents that are clearly written and to the point.

Product Showcase

ThinkCore W341/321/311

New

RISC-based Ready-to-Run Wireless Embedded Computers with WLAN, 4/2/1 Serial Ports, LAN, SD, USB, Linux OS

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 64/32 MB RAM, 16 MB flash disk
- 802.11a/b/g wireless LAN
- WEP, WPA and WPA2 encryption
- Infrastructure Mode and Ad-Hoc Mode supported
- WLAN Repeater function supported
- 4/2/1 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- Designed to withstand continuous 5G vibriation and 50G shock
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

ThinkCore W345/325/315

New

RISC-based Ready-to-Run Wireless Embedded Computers with GSM/GPRS, 4/2/1 Serial Ports, LAN, SD, USB, Linux OS

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 64/32 MB RAM, 16 MB flash disk
- Built-in quad band GSM/GPRS 850/900/1800/1900 MHz
- GPRS Class 10, Coding Scheme from CS1 to CS4 supported
- 4/2/1 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- Designed to withstand continuous 5G vibriation and 50G shock
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

ThinkCore V481

New

X86 Ready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CompactFlash, USB, Audio, WinCE 5.0 OS

- Intel Celeron M 1GHz CPU, 400 HMz FSB
- On-board 256 MB DDR SRAM, 128 MB CompactFlash
- 8 software-selectable RS-232/422/485 serial ports
- Serial port speed from 50 bps to 921.6 Kbps, supporting ANY BAUDRATE
- Dual 10/100 Mbps Ethernet for network redundancy
- Supports 2nd CompactFlash socket for storage expansion
- 2 USB 2.0 Hosts support system bootup
- LED indicators for System Ready and Storage
- Ready-to-run WinCE 5.0 communication platform
- DIN-rail or wall-mount installtion
- Robust, fanless design

EM-1220

New

RISC-based Ready-to-Run Embedded Core Module with 2 Serial Ports, Dual LANs, SD, μClinux

Wide Temperature

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 16 MB RAM, 8 MB flash disk
- 2 software-selectable RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- RS-232 serial console port supports PPP
- Ready-to-run μClinux Kernel 2.6 platform
- SD signals supported for external SD socket connection
- Built-in RTC, buzzer
- 8 GPIOs reserved for system integration
- Credit card size design for easy integration at any field site
- Full-function development kit for quick evaluation and application development
- -40 to 75°C wide temperature model available

EM-1240

New

RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LANs, SD, μClinux

- MOXA ART ARM9 32-bit 192 MHz
- On-board 16 MB RAM, 8 MB flash disk
- 4 software-selectable RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- RS-232 serial console port supports PPP
- Ready-to-run μClinux Kernel 2.6 platform
- SD signals supported for external SD socket connection
- Built-in RTC, buzzer
- 10 GPIOs reserved for system integration
- Full-function development kit for quick evaluation and application development

UC-7124/UC-7122

New

Mini RISC-based Ready-to-Run Embedded Computers with 4/2 Serial Ports, Dual LANs, SD, WinCE 5.0 OS

Wide Temperature

- Cirrus Logic EP9302 ARM9 32-bit 200 MHz processor
- On-board 16 MB RAM, 16 MB flash disk
- 4/2 software-selectable RS-232/422/485 serial ports
- Serial port speed from 50 bps to 921.6 Kbps, supporting ANY BAUDRATE
- Dual 10/100 Mbps Ethernet for network redundancy
- SD socket for storage expansion supported
- Built-in RTC, buzzer, Watchdog Timer
- Ready-to-run WinCE 5.0 platform
- -40 to 75°C wide temperature model available

Product Showcase

UC-7420/UC-7410

RISC-based Ready-to-Run Embedded Computer with 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash

- Intel XScale IXP-422/425, 266/533 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 8 RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- USB 2.0 Host
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- LCM display and keypad for HMI
- Ready-to-run Linux / WinCE 5.0 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

UC-7408

RISC-based Data Acquisition Embedded Computer with 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash

- Intel XScale IXP-422/425, 266/533 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 8 RS-232/422/485 serial ports
- 8-ch digital input and 8-ch digital output
- Dual 10/100 Mbps Ethernet for network redundancy
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- Ready-to-run Linux / WinCE 5.0 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

UC-7402

RISC-based Ready-to-Run Embedded Network Computer with Dual LANs, PCMCIA, CompactFlash

- Intel XScale IXP-422/425, 266/533 MHz processor
- On-board 128 MB RAM, 32 MB flash disk
- Dual 10/100 Mbps Ethernet for network redundancy
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- Ready-to-run Linux platform
- Hardware level data encryption engine supports AES, DES and 3DES
- SSL, SSH, TLS security function
- Built-in firewall and VPN function
- Apache web server supports PHP and XML
- DIN-rail or wall-mount installation

ThinkCore DA-660 Series

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 8/16 Serial Ports, LANs/Fiber Ports, PCMCIA, CompactFlash, USB

- Intel XScale IXP-425 533/IXP-422 266 MHz processor
- On-board128 MB RAM, 32 MB flash disk
- 8/16 RS-232/422/485 serial ports
- Dual/quad 10/100 Mbps Ethernet for network redundancy
- Standard 19-inch rackmount installation, 1U height
- Wide range of power input voltages from 100 to 240V, both AC and DC
- LCM display and keypad for HMI
- Ready-to-run Linux / WinCE 5.0 platform
- Robust, fanless design

ThinkCore IA241/IA240

RISC-based Industrial Ready-to-Run Embedded Computers with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS

Wide Temperature

TAIWAN EXCELLENCE 2006

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 64 MB RAM, 16 MB flash disk
- 4 RS-232/422/485 serial ports
- 4-ch digital input and 4-ch digital output
- Dual 10/100Mbps Ethernet for network redudancy
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- Unique patented Software Encryption Lock
- Industrial DIN-rail installation, wall-mount is also possible
- Robust, fanless design, IP30 protection mechanism
- -40 to 75°C wide temperature model available

UC-7112/UC-7110

Mini RISC-based Ready-to-Run Embedded Computers with 2 Serial Ports, Dual LANs, SD

Wide Temperature

- MOXA ART ARM9 32-bit 192 MHz processor
- 16 MB RAM (about 12 MB of user programmable space)
- 8 MB Flash ROM (about 4 MB of user programmable space)
- Dual 10/100 Mbps Ethernet for network redundancy
- 2 software-selectable RS-232/422/485 serial ports
- Serial port speed from 50 bps to 921.6 Kbps, supporting ANY BAUDRATE
- SD socket for storage expansion supported
- Built-in RTC, buzzer
- Ready-to-run µClinux Kernel 2.6 platform
- -40 to 75°C wide temperature model available (UC-7110 only)

Introduction to Embedded Computers

Ready-to-Run, Reliable, Wide Temperature

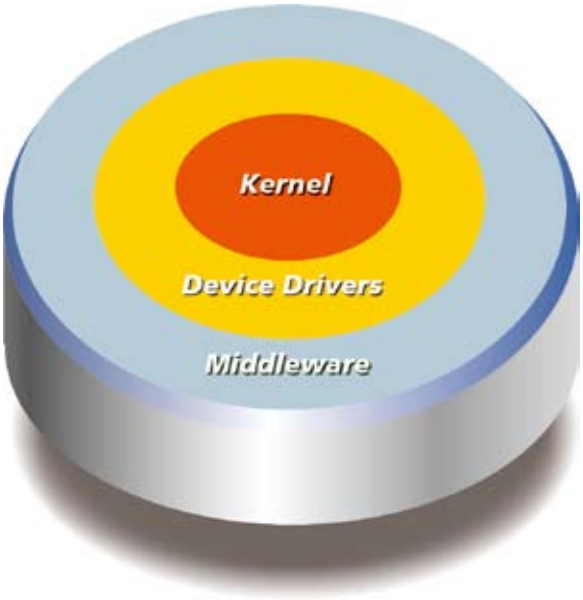
MOXA's embedded computers are all-in-one devices that handle special purpose computing tasks for industrial applications. The computers use either the RISC-based ARM9, Intel XScale, or X86 processor to provide powerful communication and computing functions. In addition, an ample number of serial ports that support different interfaces are available for connecting a variety of industrial devices to a network for demanding numerical computing, protocol conversion, and data processing tasks. Some of MOXA's embedded computers even come with a USB 2.0 port, CompactFlash, SD interfaces for storage expansion, and a PCMCIA socket for adding wireless communication capability, and the pre-built, ready-to-run Linux/Windows CE platforms are easy to access, so that software programmers can concentrate on developing their own application programs.

MOXA Ready-to-Run Embedded Computers

Pre-built Platform
- Open Linux platform
- Microsoft® Windows® CE 5.0

Device Driver ready
- USB
- Serial
- Wireless
- Ethernet
- PCMCIA
- Compact Flash
- SDK

Middleware
- Security
- Database
- Web services
- Firewall
- VPN



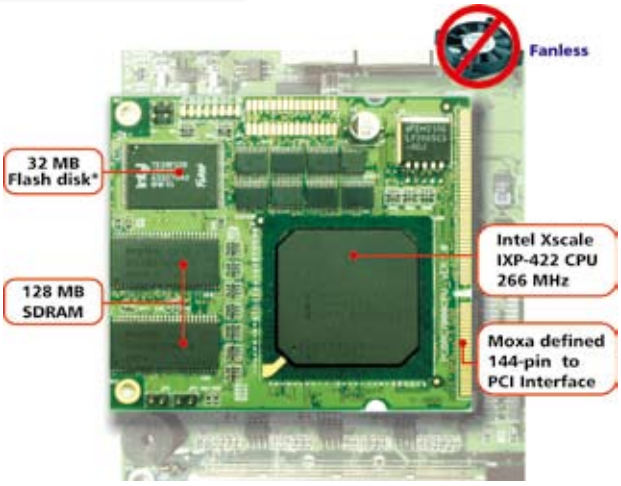
Powerful Communication and Computing

• Intel XScale IXP-422 CPU inside (for UC-7400 Series)

The IXP-422's RISC-based architecture and modern semiconductor technology differs markedly from the X86's CISC design, providing UC-7400 with a powerful computing engine and communication function. The ultra low power consumption (less than 2W) CPU turns UC-7400 series into a high performance device that will not overheat.

• Two 10/100M LAN Ports

The two 10/100M LAN ports with built-in IXP-422 provide you with a more reliable redundant network application, and hardware encryption (DES, 3DES, AES, etc.) gives your applications better security. Use these two ports for redundant or gateway applications.



With no hard disk and fan, the UC-7400 Series cordless design is well-suited for harsh and outdoor environments.

• Powerful Serial Engine

MOXA embedded computers use the MOXA MU860 8-port serial processor with on-chip hardware/software flow control to prevent any data loss. Each port comes with a 128-byte Transmit/Receive FIFO and Burst Data Mode for great performance.

MU860 can generate a more precise baudrate for special applications. For example, traditional UARTs will generate a 230400 bps baudrate for 250000 bps applications (8% error), but MU860 can give you 254234 bps, with an error of only 1.7%.

• Versatile network connections

MOXA Embedded Computers feature versatile network connection interfaces, giving you the flexibility of choosing the most appropriate connection equipment for your application.

Use an external GPRS modem or V.90 modem via the console port, or choose the LAN port with ADSL broadband connection to communicate with the Internet world.

The wireless-ready design lets you use wireless PCMCIA card to connect your devices to a wireless connection.

• Robust Design for Industrial Applications

Wall-mount design for easy installation

MOXA embedded computers with their compact size occupy less space, and their wall-mount design gives you the freedom to place them anywhere.

No fan, no hard disk operation

Since MOXA embedded computers use an on-board flash for storage and CF/SD/USB for storage expansion, system failures caused by a low MTBF hard drive are avoided. With the RISC CPU, which generates almost no heat, MOXA embedded computers do not need a fan to cool down the system, thus providing you with a more reliable system.

Wall-mount design

Field power friendly

The wide range 12 to 48 VDC power input design makes MOXA embedded computers ready for use with field 24 VDC or 48 VDC power. An optional AC power adaptor is also available for 110 to 240 VAC power inputs.

• Open yet Reliable Operating System for Easy Development

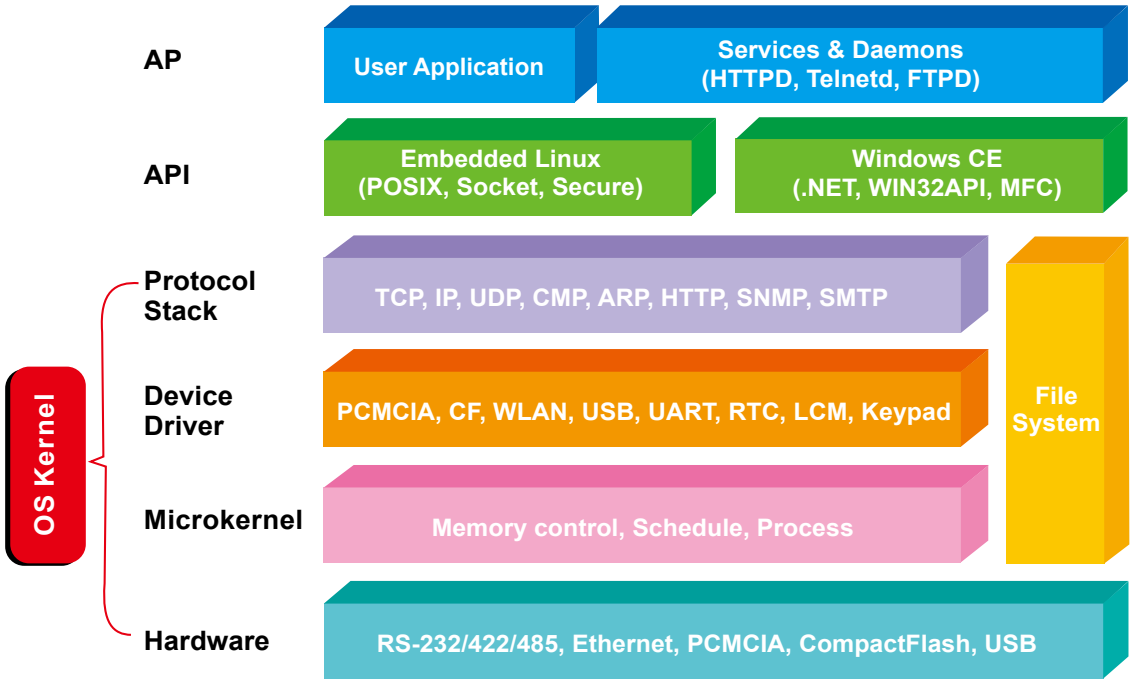
MOXA embedded computers are built on either MontaVista® Linux or Microsoft® Windows® CE 5.0 operating systems (OS). Building on an open programming environment makes a MOXA embedded computer suitable for software development and legacy system migration.

• Robust Internal File System and Expandable Data Storage

MOXA embedded computers implement a robust internal file system* for data storage. This file system controls access to the on-board flash ROM yet prevents flash data from write-corruption when the power shuts down unexpectedly.

MOXA embedded computers also provide the ability to mount external file systems* for additional data storage by attaching mass storage devices (also accessible by PC) into the CF/SD/USB slot and USB ports.

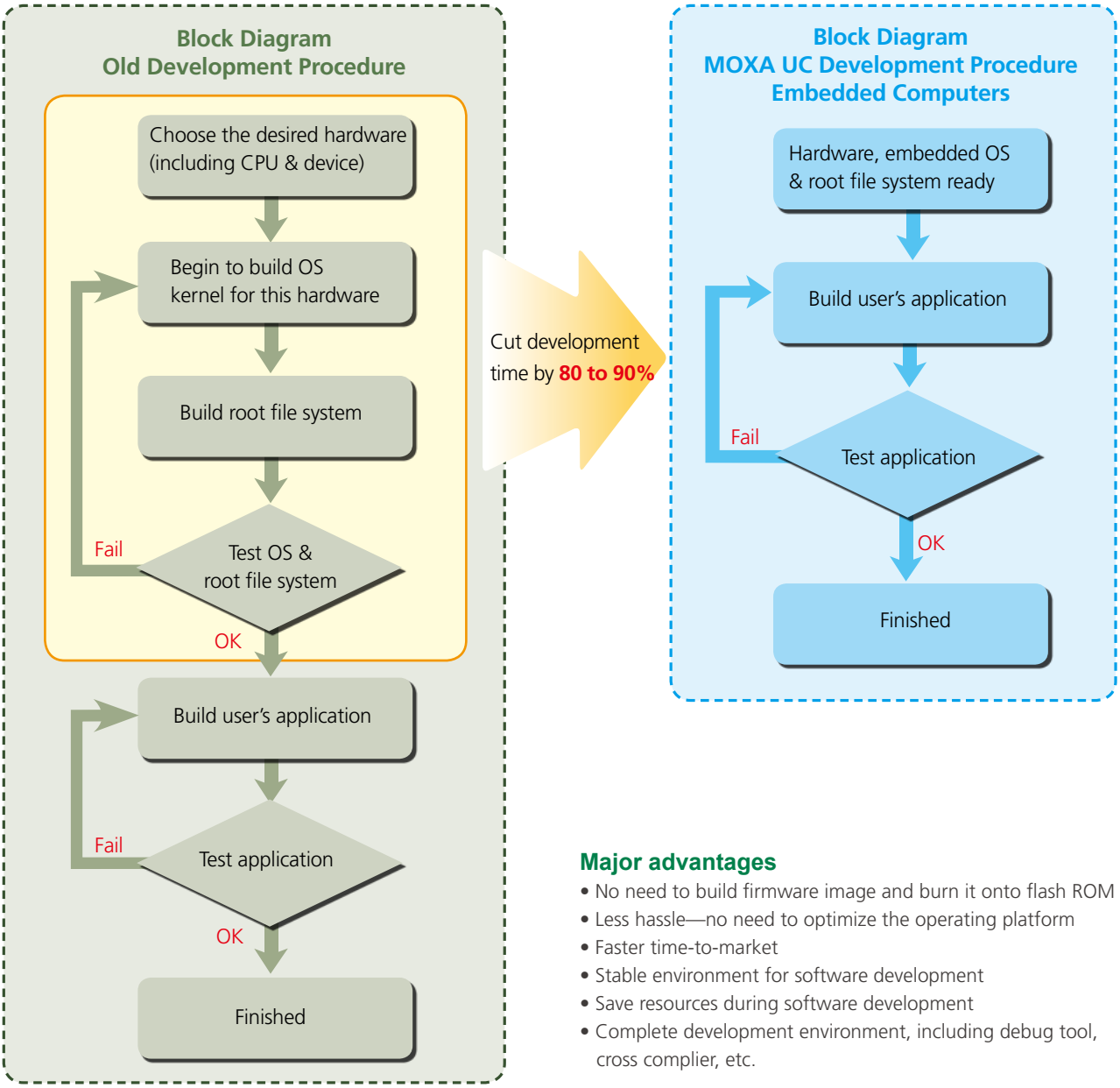
**The Linux platform supports JFFS2 (Journaling Flash File System Version 2) as its internal file system and supports a number of external file systems including EXT2, EXT3, VFAT, FAT formats. Windows CE 5.0 supports TFAT (Transaction-Safe File Allocation Table) as its internal file system and supports external FAT.*



Innovative Ready-to-Run Platform

The ready-to-run platform used by MOXA embedded computers makes software development easier and faster. With the pre-installed platform, software developers do not need to optimize the Operating System Kernel and Root File System, saving resources and offering faster time-to-market, but with less risk. Software developers can put their own application programs on the platform without the need to build the firmware image, which comprises the Operating System Kernel, Root File System, and application programs. In other words, software developers no longer need to burn the firmware image onto the flash ROM.

In the past, software developers had to choose suitable Operating System Kernel Services first, before creating a customized Operating System Kernel. Furthermore, choosing the utilities and Root File System format to adopt was another troublesome problem.



Major advantages

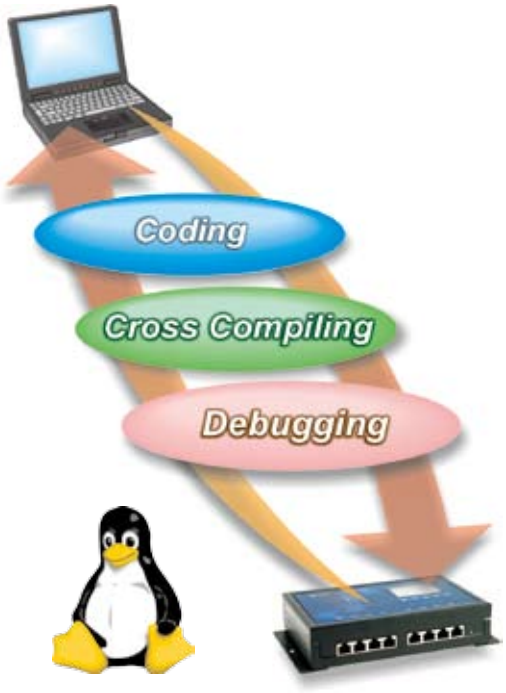
- No need to build firmware image and burn it onto flash ROM
- Less hassle—no need to optimize the operating platform
- Faster time-to-market
- Stable environment for software development
- Save resources during software development
- Complete development environment, including debug tool, cross complier, etc.

MOXA Embedded Computers Running Open Linux Platform

Open Linux architecture for easy development

The pre-installed Linux OS provides an open software operating system for your software development. This means that software written for the desktop PC is easily ported to MOXA embedded computers by performing a GNU cross compile—but without needing to modify the code.

How to develop your application with tool chains



Step 1: Set up the development environment

For Linux Environments

- Install Linux on your PC (Redhat 7.2 or above is recommended)
- Install the tool chain (Cross compiler, GlibC, GDB), included on the CD-ROM, to your Linux PC
- Configure the IP, Netmask, etc.

For Windows Environments

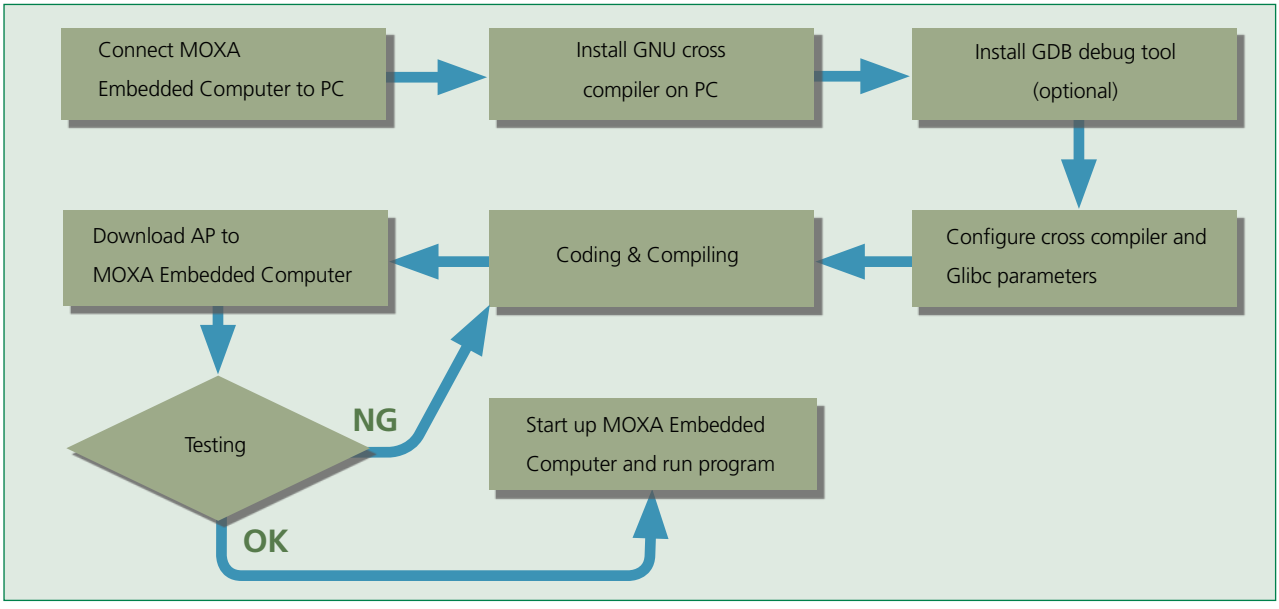
- Install the Windows tool chain (Cross compiler, GlibC, GDB), included on the CD-ROM, to your Windows PC.
- Configure the IP, Netmask, etc.

Step 2: Coding

- Develop a C or C++ user application on your PC.
- Compile C programs and link to the library with the MOXA tool chain.

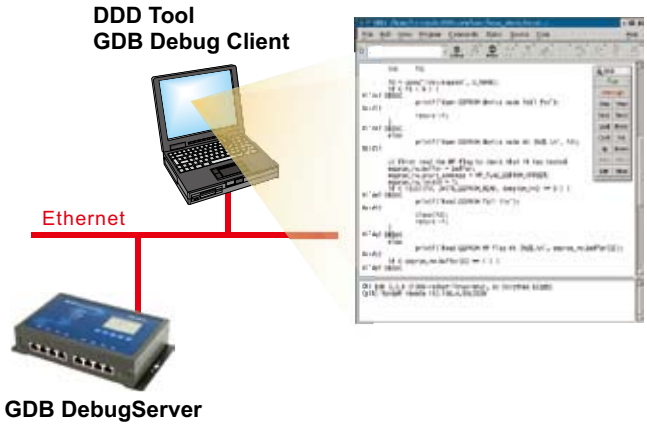
Step 3: Deployment

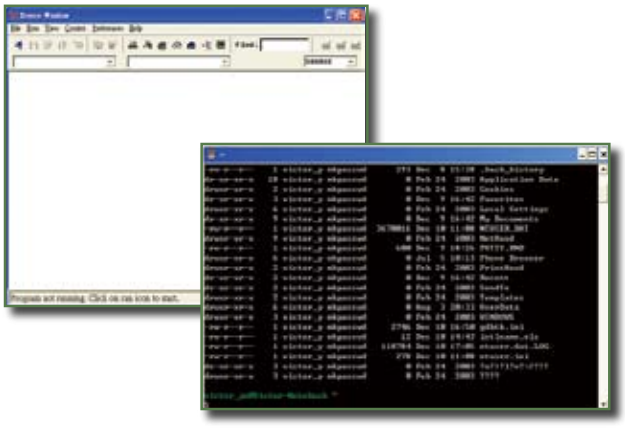
- Download the program via FTP to your MOXA embedded computer.
- MOXA embedded computer, with your own program installed, is ready to go.


Connect MOXA Embedded Computer to PC
Install GNU cross compiler on PC
Install GDB debug tool (optional)
Configure cross compiler and Glibc parameters
Coding & Compiling
Download AP to MOXA Embedded Computer
Testing
NG
OK
Start up MOXA Embedded Computer and run program

Source level debug

MOXA embedded computers (UC-7400 Series, ThinkCore DA-660 Series, ThinkCore IA241/240) have a built-in GDB server that enables software developers to use freeware, such as DDD in Linux environments, for source level debugging. MOXA also provides the Insight debug tool for Windows environment developers.

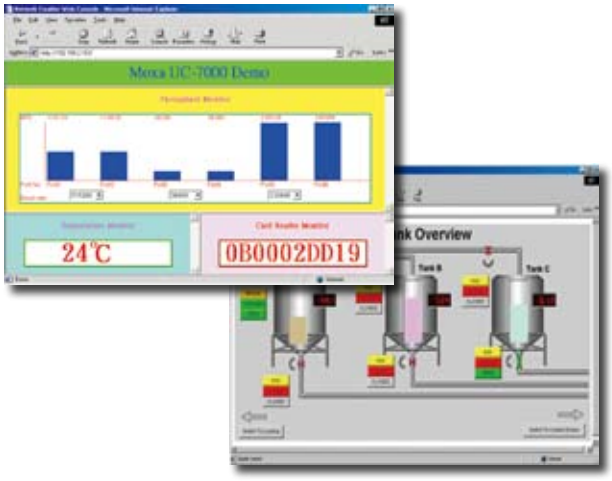




Windows Tool Chain

The Windows Tool Chain is beneficial when working with Microsoft Windows systems. Compared to using middleware with an extra Linux OS, the Windows Tool Chain results in a simpler, more stable operating environment.

- Easily installed on Windows systems
- Provides a true Linux simulation environment

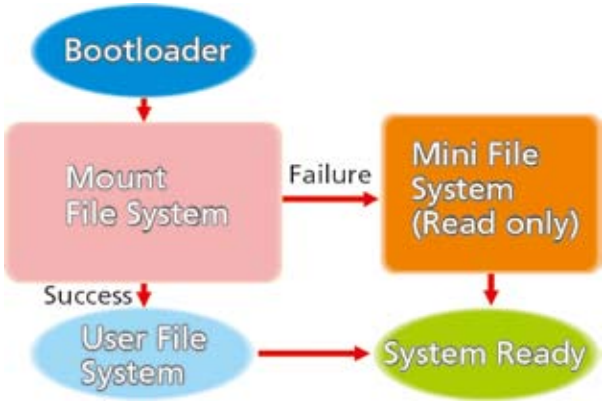


Embedded Web Server for Web applications

MOXA embedded computers have a pre-installed web server daemon that lets you set up your web application easily. Edit your web application with any familiar web tool, and then download the site to the MOXA embedded computer. Enjoy the benefits of web applications that are viewable with any popular web browser.

Robust Self-recovery File System

MOXA embedded computers provide a self-recovery file system to ensure the reliability of operation. There are two file systems inside. One is the User File System, and the other is a Mini File System. If mounting the user file system fails, MOXA embedded computers will auto-boot from the Mini File System to ensure a successful boot-up.



MOXA Embedded Computers Running Windows CE 5.0 Platform

In addition to being part of the Linux community, the MOXA embedded computer family now also includes models running the Microsoft® Windows® CE 5.0 operating system. Adopting a widely used programming environment makes a MOXA embedded computer suitable for software development and legacy system migration.

Robust Internal File System and Expandable Data Storage

The internal file system in the MOXA embedded computer implements a robust TFAT file system for data storage. This file system controls access to the on-board flash ROM yet prevents flash data from write-corruption when the power fails unexpectedly.

MOXA's embedded computers also provide the ability to mount external FAT file systems for additional data storage by attaching mass storage devices (also accessible by PC) into the compact flash slot and USB ports.

Easier Application Development with IDE Tools

Software written for the desktop PC can be easily ported to a MOXA embedded computer with very little or even no modifications. Both porting and new development can be done using any number of friendly Integrated Development Environments (IDE) tools. Choose the tools based on the application language you plan to use and install them on your development PC. For detailed installation steps, please refer to the user's manual.

- **C/C++ Applications: Use embedded Visual C++ (eVC) 4.0**

  The eVC 4.0 tools are free. You can download them from MSDN's download page. Install the eVC 4.0 tools and import service pack 4.

- **VB.NET/C# Applications: Use Visual Studio 2005**

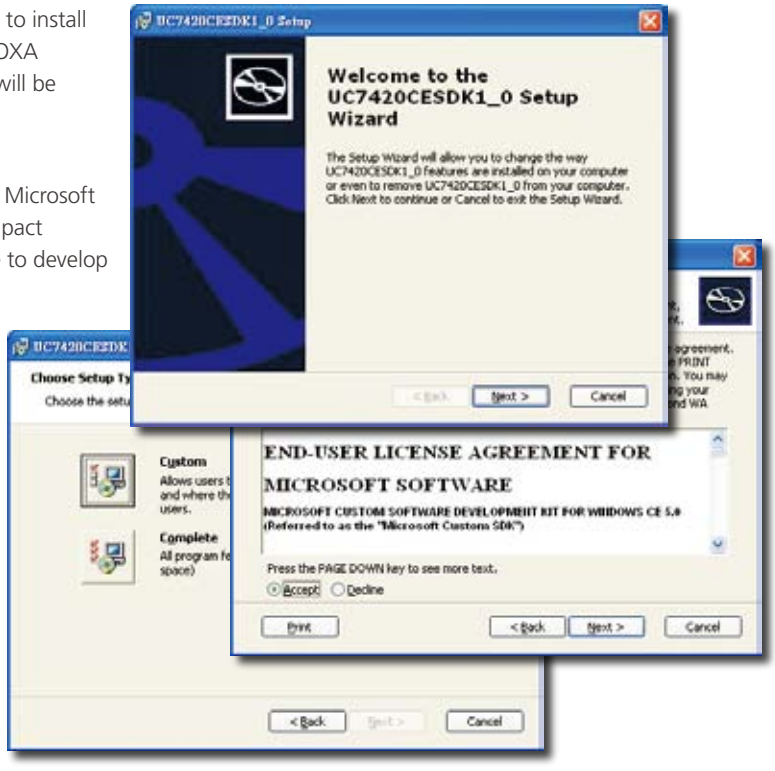
  Microsoft Visual Studio 2005 is a complete set of development tools for building ASP.NET Web applications, XML Web services, and mobile applications. Visual Basic, Visual C++, Visual C#, and Visual J# all use the same IDE, which allows them to share tools and facilities when creating mixed-language solutions.

- **Visual Studio .NET 2003**

  Visual Studio .NET 2003 is another IDE you can use to develop your applications.

After you have installed the IDE tool, you also need to install an additional Windows CE 5.0 SDK provided by MOXA on your development PC. After doing so, the SDK will be integrated with your IDE tool.

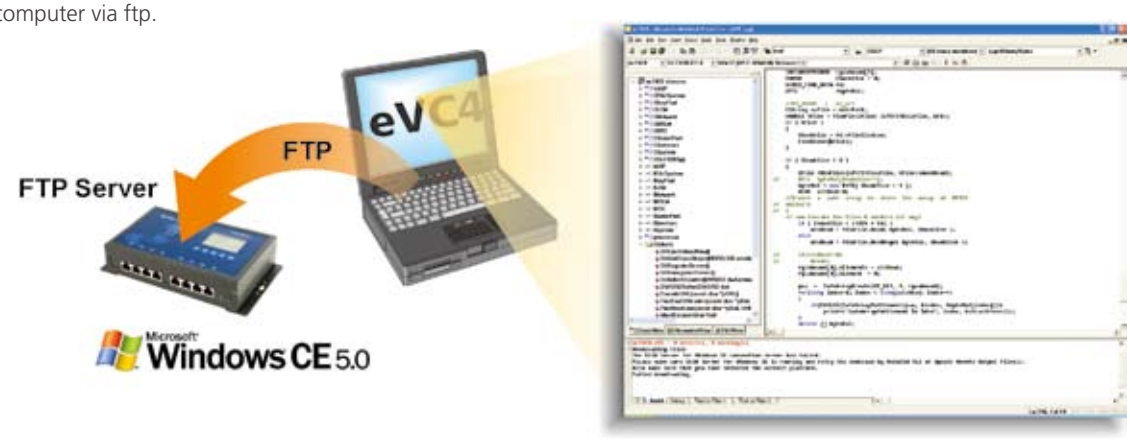
The SDK includes C Libraries and run-time libraries, Microsoft Foundation Classes (MFC), SOAP Toolkit, .NET Compact Framework, XML, and Winsock, which you can use to develop your applications.



Application Coding and Deployment

While developing your applications, ensure that the MOXA embedded computer is accessible on the same LAN as your development PC.

1. Use IDE such as embedded visual C++. visual studio 2005, visual studio NET 2003 to develop applications on your development PC.
2. Upload the applications to the target MOXA embedded computer via ftp.



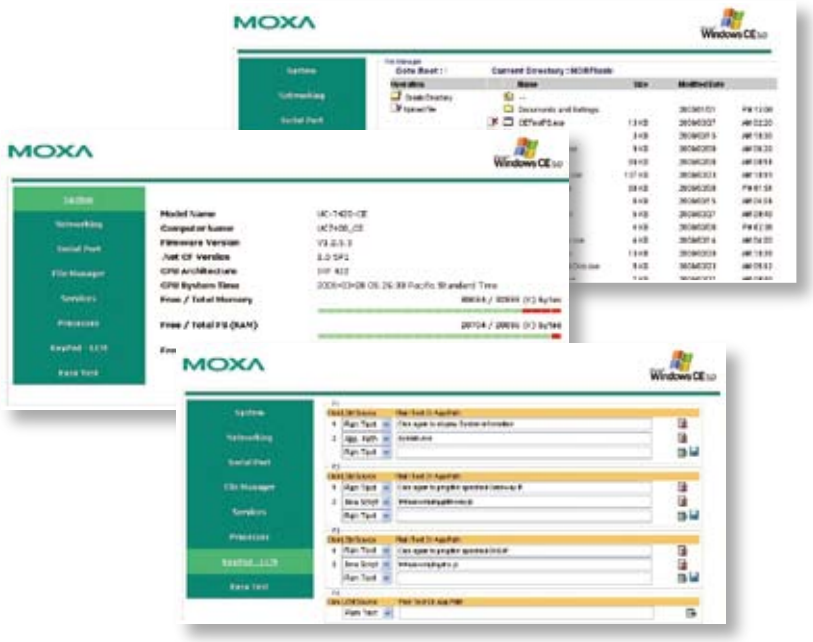
Web-based Management System

MOXA's embedded computers are network-centric programmable platforms designed to be used as front-end computers for data acquisition and industrial control. The embedded computer is often located away from the system administrator in the same harsh environment as the controlled devices. This makes the task of managing the computer remotely an important aspect of the embedded computer's operation.

To resolve this remote management issue and reduce the work load of the system administrator, the MOXA embedded computer is installed with a Web-based management system. The system incorporates often-used features into an internal site and categorizes the features on a menu bar, as shown in the accompanying figures.

- System Information
- Networking/Server Configuration
- Process (Thread) Monitoring/Control
- Services Monitoring/Control
- Binary/Text File Management and Upload

This web-based management system allows you to manage web sites, the registry database for system and application programs, and many other aspects of the computer's operation.



MOXA Device Manager (MDM)

MOXA Device Manager Provides Efficient Online Management of All MOXA Embedded Computers

The Challenges of Managing Distributed Embedded Computers

Systems that incorporate several devices located at remote sites present a big challenge to solution providers. This is particularly true for industrial applications that use several headless embedded computers distributed over a wide area. Although this type of computer is generally accessible from over the network, the existing remote management options present a rather clumsy solution for managing large numbers of embedded computers.

One of the most common methods of managing embedded computers remotely over the network is to use Telnet/SSH. However, one of the main drawbacks to this type of management is that you can only connect to one embedded computer at time. In addition, the administrator must actively type in the IP address of the embedded computer to establish the Telnet/SSH connection. It can be a real nightmare to keep track of which IP address is associated with which embedded computer.

Another method of managing an embedded computer includes working from the command line. Although this can be done from over the network, most administrators find it difficult to remember all of the commands that are required to manage files and run programs. Script files that combine several commands in one text file can be used to automate the command line method, but this option can also be quite time-consuming for administrators that manage tens if not hundreds of machines.

Using MDM (Moxa Device Manager) to Manage Embedded Computers

The critical task for this kind of system is finding a way to create a well-designed management tool. MOXA now provides a new management tool that helps system administrators overcome this "remote management nightmare."

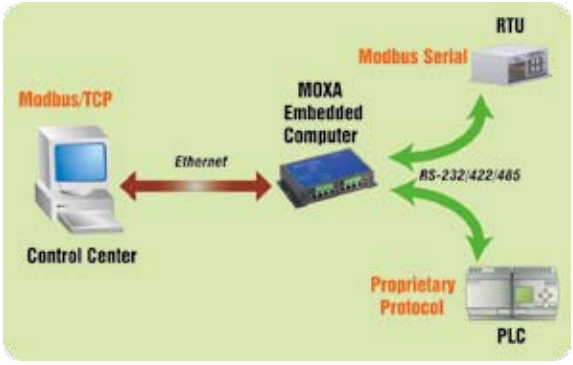
Moxa Device Manager (MDM) is an efficient online device management tool that can be used with all of MOXA's embedded computers. One of the key benefits of this tool is that management tasks, such as configuring the network or serial ports, managing and/or transmitting text and binary files, and monitoring and controlling processes, can be handled easily using a Windows-based user interface. In addition, MDM can be used to manage different models of embedded computer, and embedded computers that use different operating systems, all from one centrally located computer. As long as the individual embedded computers are pre-installed with an MDM agent, they can be recognized and managed by the unified MDM tool from your PC. These features help ensure that MDM gives system integrators an efficient tool for handling all remote devices from one computer.

In addition to controlling heterogeneous computer systems, the traffic between the MDM tool and any of the MDM agents is encrypted. This feature protects data transmitted from the system. Users can comfortably manage the remote devices without worrying about the usual risks associated with transmitting data over a network.

Protocol Converter

MOXA embedded computer can be used not only as a front-end data control unit, but also a powerful protocol converter that can deal with the complicated protocol communication among remote devices and the control center.

As the traditional industrial devices use different proprietary protocols, it is difficult when wishing to communicate on different platforms: Programmers have to spend lots of efforts developing the relevant software and it even takes time to make the whole system work.



Using MOXA embedded computer can reduce the effort in dealing with the protocol conversion. It can be used as a strong unit that help accelerate the communication between devices and the control center. For example, the Modbus Serial protocol signals at the remote site can be pre-processed by MOXA embedded computer and then transmitted to the server with Modbus/TCP protocol. Even the proprietary protocol can be dealt easily with MOXA embedded computer, eventually shortening the time to establish the whole system.

Software Encryption Lock

This patented technology aims to protect both software developers and system integrators from having their software copied illegally. The encryption lock works in the following way:

1. Configure the encryption key on the target site (e.g., the MOXA embedded computers).
2. Configure the same encryption key on the PC that you use to develop your software programs.

Once the encryption key has been set, your software programs will not work properly without the correct encryption key. In other words, neither end-users nor competitors will be able to steal or copy your intellectual property for either personal or commercial use.

** For detailed information on the products that support Software Encryption Lock, please contact our sales representative.

MOXA Embedded Applications Theme Site

In recent years, MOXA's many software partners have developed applications for our ready-to-run, reliable, wide temperature embedded computers, and we are using this theme site to present how MOXA's solutions are used in embedded applications. The theme site also gives system integrators and software partners an excellent tool for introducing MOXA's embedded computers and solutions to various vertical markets, including power, transportation, POS, environmental monitoring, manufacturing automation, and medical applications.

Our embedded solutions are designed for industrial applications and are easy to implement with different operating systems. They offer a user-friendly environment for both Linux and Windows CE programmers, and allow software partners to develop applications with ease.

The Embedded Applications Site is located at the following URL:

http://www.moxa.com/Zones/Embedded_Computing/Embedded_Applications/index.htm

ThinkCore W300 Series

RISC-based Ready-to-Run Wireless Embedded Computers with GSM/GPRS, 1/2/4 Serial Ports, LAN, SD, USB and Relay Output

ThinkCore W300 Series Overview

The ThinkCore W300 Series of RISC-based wireless embedded computers provide two types of communication solution. The W311, W321, and W341 models support short range WLAN transmission, and the W315, W325, and W345 models support 802.11a/b/g or long range GSM/GPRS cellular transmission. In addition, the W300 embedded computers come with RS-232/422/485 serial ports, an Ethernet port, and an SD socket, as well as two USB 2.0 hosts and one relay output channel in a mini size, rugged chassis. All W300 wireless embedded computers use the MOXA ART ARM9 32-bit RISC processor, which helps guarantee that the embedded computers are solid control units, and fully satisfy users' demands for data processing efficiency and performance.

Designed with a small package, versatile communication features, and a strong computing platform, the ThinkCore W300 embedded computers use existing wired or wireless networks to connect serial devices for demanding numerical computing, protocol conversion, and data processing tasks. The W311, W321, and W341 models support 802.11a/b/g to provide data transmission and device monitoring at locations that require wireless communication; various encryption options are available for data transmission security. The W315, W325, and W345 models have an embedded GSM/GPRS 850/900/1800/1900 cellular module that extends the network system for long-range communication, fully ensuring seamless and reliable communication for industrial applications. Users can build peer-to-peer, distributed wireless communication embedded systems to make traditional wired devices wireless, and provide higher mobility and greater intelligence.

The pre-installed ready-to-run Linux-based operating system provides an open software operating system for software program development. This means that software written for desktop PCs is easily ported to the ThinkCore W300 by using a common compiler, so that you won't need to spend time modifying existing software code. The operating system, device drivers, and your own software can all be stored in the ThinkCore W300's Flash memory. All of these features make the ThinkCore W300 embedded computers an optimal choice for setting up applications that require serial and WLAN/Cellular communications.

WLAN for Short-range Communication

The ThinkCore W311, W321, and W341 models come with 1, 2, and 4 RS-232/422/485 serial ports, respectively. All three products offer powerful serial connectivity for connecting a variety of industrial remote devices, and can be used for demanding numerical computing, protocol conversion, and data processing tasks. Moreover, the wireless LAN capability provides a reliable and convenient data transmission solution for field sites where wired communication is costly or unavailable.

1. 802.11a/b/g: The embedded 802.11a/b/g module provides a stable wireless network connection and communication, enabling the ThinkCore W311/321/341 to be used as control units for short-range communication.

Ad-hoc Mode

2. Dual Network Mode: All ThinkCore W300 Series embedded computers support Infrastructure Mode and Ad-hoc Mode for added flexibility when constructing a wireless architecture.

Infrastructure Mode

3.Full Encryption for Data Transmission Security: The WEP, WPA, and WPA2 designs provide safe and reliable wireless communication and data acquisition for remote devices.

4. Support Repeater Function: The ThinkCore W311/321/341 can be used as a repeater that can relay the communication of the wireless embedded computers.

Repeater Function

Quad Band GSM/GPRS for Long-range Communication

An embedded quad band GSM/GPRS module makes the ThinkCore W315/325/345 embedded computers particularly well suited for connecting to remote devices that are not easily reached with a land-based line, or in locations that require stable wireless service. This kind of module extends communication to a long-range level, and is a convenient solution for any mobile industrial application.

GSM/GPRS communication makes remote device control and monitoring not only feasible but also straightforward.

1.Quad Band GSM/GPRS Service: When used with the embedded GSM/GPRS 900/1800/850/1900 MHz module, the ThinkCore W315/325/345 provide long-range communication that is suitable for industrial applications where wired and wireless LAN services are either impossible or extremely costly.

2. Stable and Reliable Wireless Communication: Support for standard GPRS multi-slot Class 10 and GPRS mobile station Class B allows the ThinkCore W315/325/345 to offer quick and reliable wireless communication for any industrial M2M application.

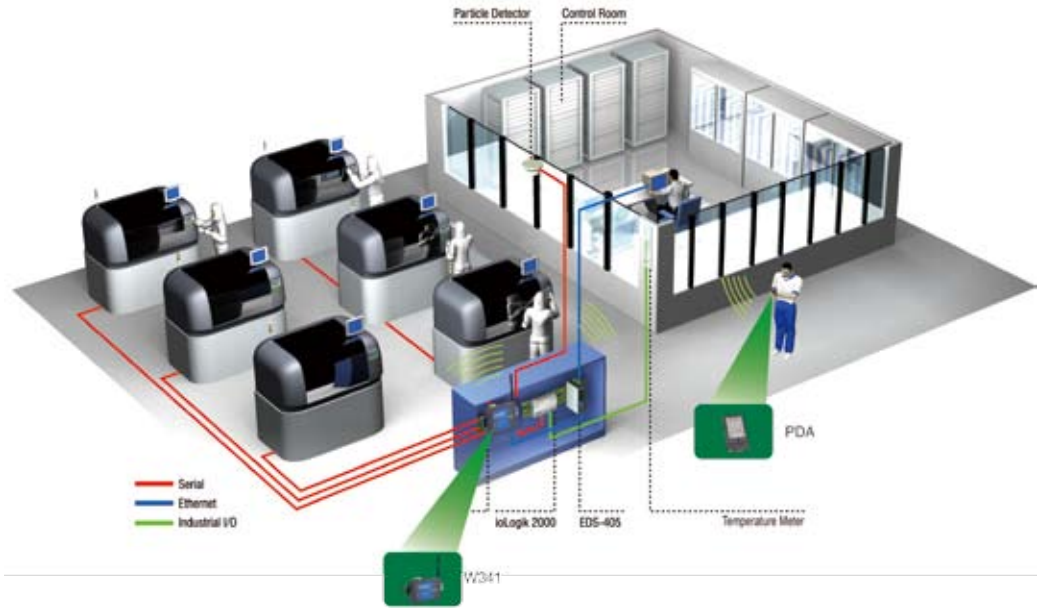
Strong Anti-vibration and Anti-shock Design

The ThinkCore W300 Series has an industrial grade, rugged design that can endure continuous 5G vibration, and also provide a 50G anti-shock guarantee, making the W300 series the best embedded computer solution for industrial environments that experience strong vibrations. The W300 Series can also be used as the core computer for applications that require installing the embedded computer on moving objects.

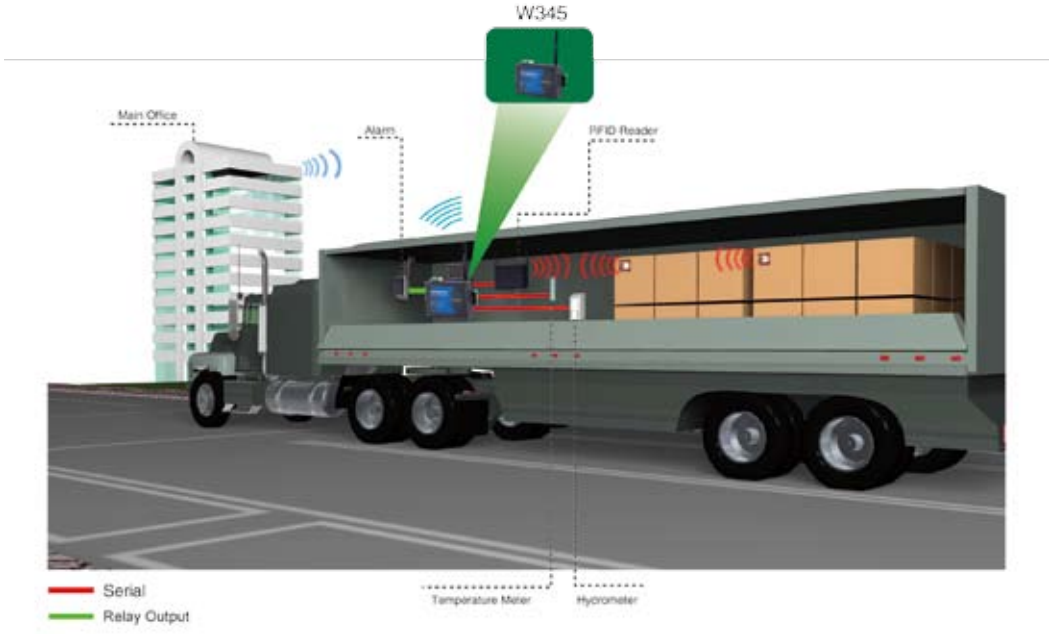
Typical Applications

1. ThinkCore W311/W321/W341 Embedded Computers can be used for field site device monitoring through wireless LAN architecture.

Manufacturing Automation



2. ThinkCore W315/W325/W345 Embedded Computers are suited for mobile device monitoring through GSM/GPRS architecture.



Intelligent Transportation

ThinkCore W300 Series Product Comparison Chart

Model Name	W311	W321	W341	W315	W325	W345
CPU	MOXA ART 32-bit ARM9	MOXA ART 32-bit ARM9	MOXA ART 32-bit ARM9	MOXA ART 32-bit ARM9	MOXA ART 32-bit ARM9	MOXA ART 32-bit ARM9
RAM	32 MB	32 MB	64 MB	32 MB	32 MB	64 MB
Flash	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
OS	Linux	Linux	Linux	Linux	Linux	Linux
Network Interface	10/100 Mbps x 1 RJ45 Connector	10/100 Mbps x 1 RJ45 Connector	10/100 Mbps x 1 RJ45 Connector	10/100 Mbps x 1 RJ45 Connector	10/100 Mbps x 1 RJ45 Connector	10/100 Mbps x 1 RJ45 Connector
WLAN	802.11 a/b/g	802.11 a/b/g	802.11 a/b/g	N/A	N/A	N/A
Cellular	N/A	N/A	N/A	GSM/GPRS	GSM/GPRS	GSM/GPRS
Serial Port	RS-232/422/485 x 1 DB9 Male Connector	RS-232/422/485 x 1 DB9 Male Connector	RS-232/422/485 x 1 DB9 Male Connector	RS-232/422/485 x 1 DB9 Male Connector	RS-232/422/485 x 1 DB9 Male Connector	RS-232/422/485 x 1 DB9 Male Connector
Serial Protection	15 KV ESD for all signals					
Data Bits	1, 1.5, 2					
Stop Bits	5, 6, 7, 8					
Parity	none, even, odd, space, mark					
Flow Control	RTS/CTS, XON/XOFF, RS-485 ADDC™					
Speed	50 bps to 921.6 Kbps, supports ANY BAUDRATE					
Serial Console	RS-232 x 1 (TxD, RD, GND), 4-pin header					
USB 2.0 Host	N/A	N/A	2*	N/A	N/A	2*
Relay Output	N/A	N/A	1	N/A	N/A	1
Storage Expansion	N/A	SD x 1**	SD x 1**	N/A	SD x 1**	SD x 1**
Real Time Clock	Yes	Yes	Yes	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes	Yes	Yes	Yes
Watchdog Timer	Yes	Yes	Yes	Yes	Yes	Yes
Reset Button	Reset x 1	Reset x 1	Reset x 1	Reset x 1	Reset x 1	Reset x 1
Power Input	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC	12 to 48 VDC
Power Consumption	400mA@12VDC, 4.8W	400mA@12VDC, 4.8W	600mA@12VDC without loading USB ports 1.2A@12VDC with loading 2 USB ports	400mA@12VDC, 4.8W	400mA@12VDC, 4.8W	600mA@12VDC without loading USB ports 1.2A@12VDC with loading 2 USB ports
Dimensions (W x D x H)	67 x 100 x 22 mm	77 x 111 x 26 mm	150 x 100 x 38 mm	77 x 111 x 26 mm	77 x 111 x 26 mm	150 x 100 x 38 mm
Weight	150 g	185 g	390 g	195 g	195 g	400 g
Operating Temperature	-10 to 60°C (14 to 140°F) 5 to 95% RH					
Storage Temperature	-20 to 80°C (-4 to 176°F) 5 to 95% RH					
Regulatory Approvals	EMC: CE Class A, FCC Class A; Safety: UL, cUL, TÜV					
Warranty	5 years	5 years	5 years	5 years	5 years	5 years

* USB 2.0 Host is designed for external storage expansion.

** SD socket is designed for external storage expansion.

ThinkCore W311

New

Mini RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 1 Serial Port, LAN and Linux OS

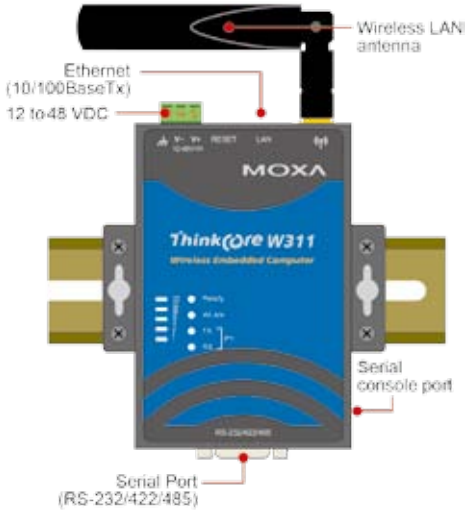
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 32 MB RAM, 16 MB flash disk
- 802.11a/b/g wireless LAN
- WEP, WPA, and WPA2 encryption
- Infrastructure Mode and Ad-Hoc Mode supported
- WLAN Repeater function supported
- 1 software-selectable RS-232/422/485 serial port
- 10/100 Mbps Ethernet for network redundancy
- Designed to withstand 5G continuous vibration and 50G shocking
- Ready-to-run Linux 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

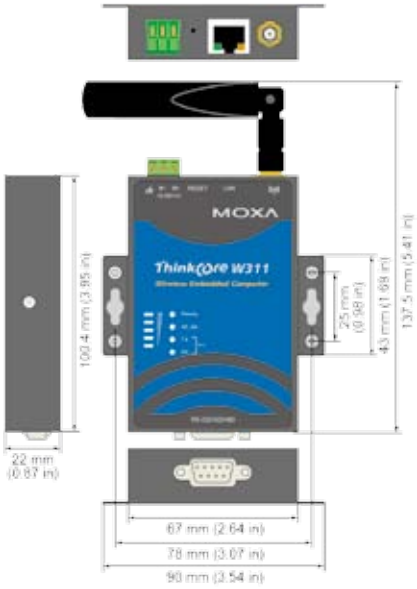
Overview

The ThinkCore W311 embedded computer features 1 software-selectable RS-232/422/485 serial port, 802.11a/b/g for WLAN connections, and 1 Ethernet port. The MOXA ART 32-bit ARM9 processor and the built-in Linux OS provide a powerful and reliable platform for harsh, industrial environments, promising an ideal solution for industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

Appearance



Dimensions



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 32 MB

Flash: 16 MB

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

WLAN Communication

Standard Compliance: 802.11a/b/g

Radio Frequency Type: DSSS, CCK, OFDM

Radio Frequency Band:
802.11a: 5.15~5.25GHz,
5.25~5.35GHz, 5.725~5.825GHz
802.11b/g: U.S., Europe and Japan product covering 2.4 to 2.484 GHz

Media Access Protocol:
Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)

Modulation:
802.11a/g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
802.11b: DSSS (DBPSK, DQPSK, CCK)

Transmission Power:(Typical)
5.15~5.35GHz: 14dBm@ 6Mbps; 14dBm@ 54Mbps
5.725~5.825GHz: 14dBm@ 6Mbps; 13dBm@ 54Mbps
2.412~2.483GHz (IEEE802.11g): 17dBm@ 6Mbps; 15dBm@54Mbps
2.412~2.472GHz (IEEE802.11b): 18dBm@ 1~11Mbps

Receiver Sensitivity:(Typical)
5.15~5.35GHz: 6Mbps@ -82dBm; 54Mbps@ -67dBm
5.47~5.725GHz: 6Mbps@ -82dBm; 54Mbps@-67dBm
5.725~5.825GHz: 6Mbps@ -80dBm; 54Mbps@ -69dBm
2.412~2.472GHz(IEEE802.11g): 6Mbps@ -84dBm; 54Mbps@-69dBm
2.412~2.472GHz(IEEE802.11b): 11Mbps@ -82dBm; 1Mbps@-90dBm

Transmission Rate:
54 Mbps with auto fallback (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
802.11b support rate: 1M, 2M, 5.5M, 11Mbps
802.11a/g support rate: 6M, 9M, 12M, 18M, 24M, 36M, 48M, 54Mbps

Transmission distance:
Up to 100 meters (@ 11 Mbps, in open areas)

Security: WEP 64-bit/128-bit, WPA, WPA2 data encryption

Antenna Connector: Reverse SMA

Antenna: External 2 dbi Dipole Antenna

WLAN Mode: Ad-hoc (802.11b/g only), Infrastructure

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection: built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port: 1 software selectable RS-232/422/485 port, DB9 male connector

Protection: Built-in 15KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baud Rate

LEDs

System: Ready

WLAN: Enable, Signal Strength

LAN: 10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input: 12 to 48 VDC

Power Consumption: 400mA@12VDC, 4.8W

Mechanical

Dimension (WxDxH):
67 x 100.4 x 22 mm (without wall mount ear and antenna)

Weight: 150 g

Antenna: 110mm

Construction Material: aluminum, 1 mm

Mounting:
Wall-mounting, DIN-Rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC, CE (Class A)

Safety:TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System:JFFS2 (on-board flash)

System Utilities: : bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

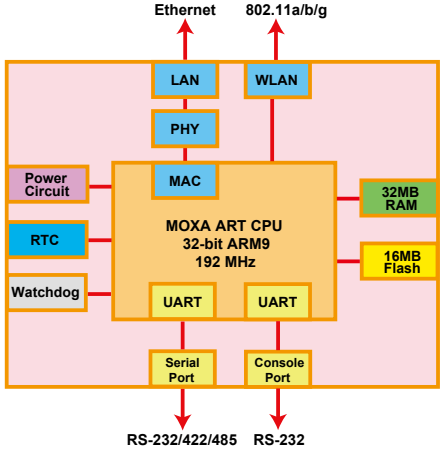
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc,Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

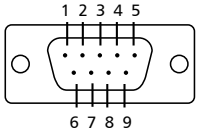
Device Drivers: UART, RTC, Buzzer

H/W Block Diagram



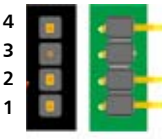
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W311-LX NEW

Mini RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 1 Serial Port, LAN, Linux OS

All items include

- 1 W311 embedded computer
- Quick Installation Guide
- Document & Software CD
- WLAN Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore W321

New

Mini RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 2 Serial Ports, LAN, SD, and Linux OS

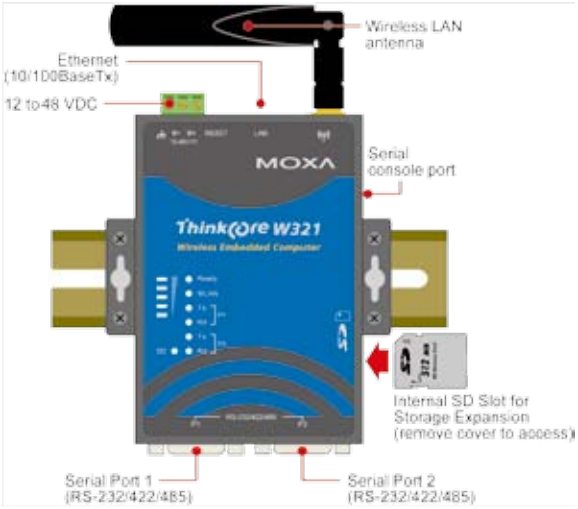
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 32 MB RAM, 16 MB flash disk
- 802.11a/b/g wireless LAN
- WEP, WPA, and WPA2 encryption
- Infrastructure Mode and Ad-Hoc Mode supported
- WLAN Repeater function supported
- 2 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- 5G continuous vibration and 50G shocking endurable
- Designed to withstand 5G continuous vibration and 50G shocking
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

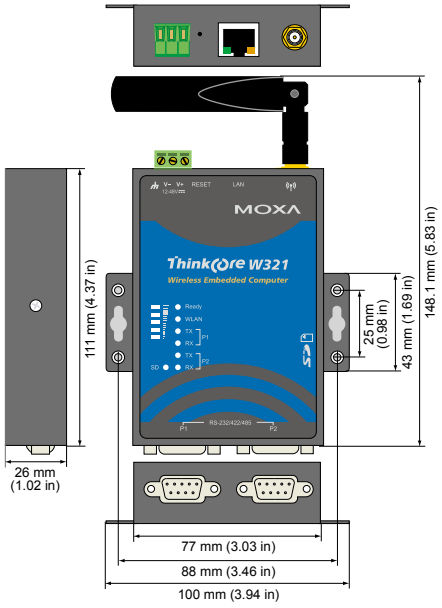
Overview

The ThinkCore W321 embedded computer features 2 software-selectable RS-232/422/485 serial ports, 802.11a/b/g for WLAN communication, 1 Ethernet port, and an SD socket for external storage expansion. The MOXA ART 32-bit ARM9 processor and the built-in Linux system provide a powerful and reliable platform for any harsh, industrial environment, promising an ideal solution for industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

Appearance


Wireless LAN antenna
Ethernet (10/100BaseTx)
12 to 48 VDC
Serial console port
Internal SD Slot for Storage Expansion (remove cover to access)
Serial Port 1 (RS-232/422/485)
Serial Port 2 (RS-232/422/485)

Dimensions



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 32 MB

Flash: 16 MB

Storage Expansion: SD socket x 1 for storage expansion

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

WLAN Communication

Standard Compliance: 802.11a/b/g

Radio Frequency Type: DSSS, CCK, OFDM

Radio Frequency Band:

802.11a: 5.15~5.25GHz, 5.25~5.35GHz, 5.725~5.825GHz

802.11b/g: U.S., Europe and Japan product covering 2.4 to 2.484 GHz

Media Access Protocol:

Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)

Modulation:

802.11a/g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
802.11b: DSSS (DBPSK, DQPSK, CCK)

Transmission Power:(Typical)

5.15~5.35GHz: 14dBm@ 6Mbps; 14dBm@ 54Mbps

5.725~5.825GHz: 14dBm@ 6Mbps; 13dBm@ 54Mbps

2.412~2.483GHz (IEEE802.11g): 17dBm@ 6Mbps; 15dBm@54Mbps

2.412~2.472GHz (IEEE802.11b): 18dBm@ 1~11Mbps

Receiver Sensitivity:(Typical)

5.15~5.35GHz: 6Mbps@ -82dBm; 54Mbps@ -67dBm

5.47~5.725GHz: 6Mbps@ -82dBm; 54Mbps@-67dBm

5.725~5.825GHz: 6Mbps@ -80dBm; 54Mbps@ -69dBm

2.412~2.472GHz(IEEE802.11g): 6Mbps@ -84dBm; 54Mbps@-69dBm

2.412~2.472GHz(IEEE802.11b): 11Mbps@ -82dBm; 1Mbps@-90dBm

Transmission Rate:

54 Mbps with auto fallback (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
802.11b support rate: 1M, 2M, 5.5M, 11Mbps
802.11a/g support rate: 6M, 9M, 12M, 18M, 24M, 36M, 48M, 54Mbps

Transmission distance:

Up to 100 meters (@ 11 Mbps, in open areas)

Security: WEP 64-bit/128-bit, WPA, WPA2 data encryption

Antenna Connector: Reverse SMA

Antenna: External 2 dbi Dipole Antenna

WLAN Mode: Ad-Hoc (802.11b/g only), Infrastructure

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection: Built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port: 2 software selectable RS-232/422/485 port, DB9 male connector

Protection: Built-in 15KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baud Rate

LEDs

System: Ready, SD

WLAN: Enable, Signal Strength

LAN: 10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input: 12 to 48 VDC

Power Consumption: 400mA@12VDC, 4.8W

Mechanical

Dimension (WxDxH):

77 x 111 x 26 mm (without wall mount ear and antenna)

Weight: 185 g

Antenna: 110mm

Construction Material: aluminum, 1 mm

Mounting: Wall-mounting, DIN-rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:

-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:

-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC, CE (Class A)

Safety: TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System:JFFS2 (on-board flash)

System Utilities: : bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

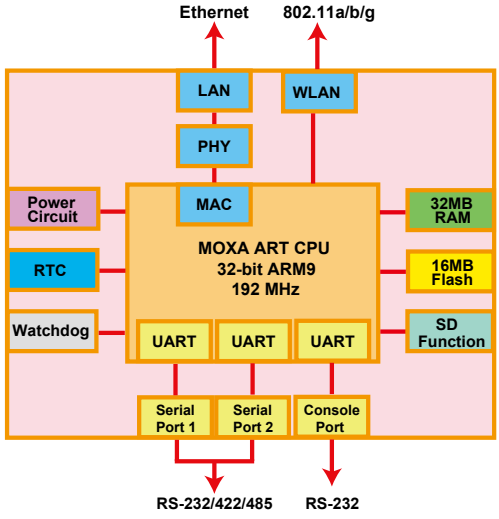
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc,Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

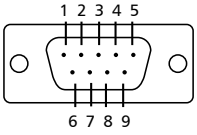
Device Drivers: SD Card, UART, RTC, Buzzer

H/W Block Diagram



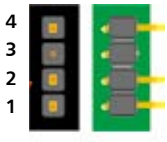
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W321-LX NEW

Mini RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 2 Serial Ports, LAN, SD, and Linux OS

All items include

- 1 W321 embedded computer
- Quick Installation Guide
- Document & Software CD
- WLAN Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore W341

New

RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 4 Serial Ports, LAN, SD, USB, Relay Output, and Linux OS

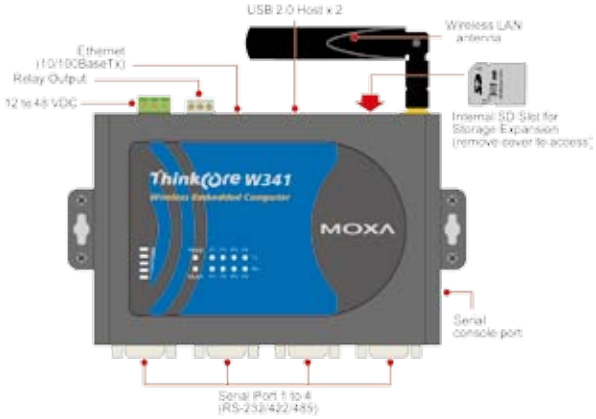
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 64 MB RAM, 16 MB flash disk
- 802.11a/b/g wireless LAN
- WEP, WPA, and WPA2 encryption
- Infrastructure Mode and Ad-Hoc Mode supported
- WLAN Repeater function supported
- 4 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- Relay Output for external alarm connection
- Designed to withstand 5G continuous vibration and 50G shocking
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

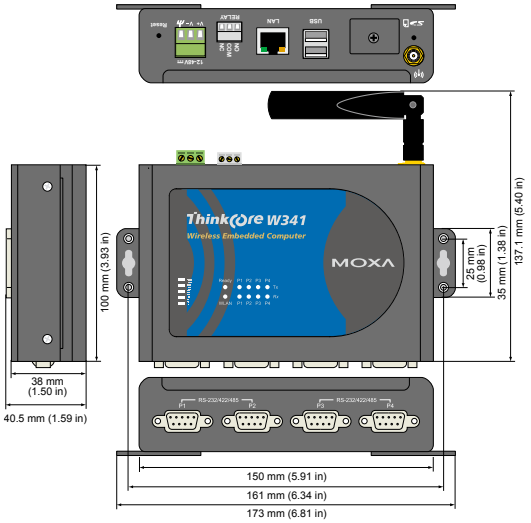
Overview

The ThinkCore W341 embedded computer features 4 software-selectable RS-232/422/485 serial ports, 802.11a/b/g for WLAN communication, 1 Ethernet port, 2 USB 2.0 hosts, 1 relay output, and an SD socket for external storage expansion. The MOXA ART 32-bit ARM9 processor and the built-in Linux OS provide a powerful and reliable platform for any harsh, industrial environment, promising an ideal solution for industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

Appearance



Dimensions



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 64 MB

Flash: 16 MB

Storage Expansion: SD socket x 1 for storage expansion

USB: USB 2.0 Host x 2

Relay Output: Form C, SPDT x 1
Normal Switching Capacity: 2A @30 VDC
Switching Power: 60W max.
Switching Voltage: 220 VDC max.
Switching Current: 2A max.
Operating Time: 4 ms @ 20°C
Initial Contact Resistance: 100 mohm max.

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

WLAN Communication

Standard Compliance: 802.11a/b/g

Radio Frequency Type: DSSS, CCK, OFDM

Radio Frequency Band:
802.11a: 5.15~5.25GHz, 5.25~5.35GHz, 5.725~5.825GHz
802.11b/g: U.S., Europe and Japan product covering 2.4 to 2.484 GHz

Media Access Protocol:
Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)

Modulation:
802.11a/g: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
802.11b: DSSS (DBPSK, DQPSK, CCK)

Transmission Power:(Typical)
5.15~5.35GHz: 14dBm@ 6Mbps; 14dBm@ 54Mbps
5.725~5.825GHz: 14dBm@ 6Mbps; 13dBm@ 54Mbps
2.412~2.483GHz (IEEE802.11g): 17dBm@ 6Mbps; 15dBm@54Mbps
2.412~2.472GHz (IEEE802.11b): 18dBm@ 1~11Mbps

Receiver Sensitivity:(Typical)
5.15~5.35GHz: 6Mbps@ -82dBm; 54Mbps@ -67dBm
5.47~5.725GHz: 6Mbps@ -82dBm; 54Mbps@-67dBm
5.725~5.825GHz: 6Mbps@ -80dBm; 54Mbps@ -69dBm
2.412~2.472G(IEEE802.11g): 6Mbps@ -84dBm; 54Mbps@-69dBm
2.412~2.472G(IEEE802.11b): 11Mbps@ -82dBm; 1Mbps@-90dBm

Transmission Rate:
54 Mbps with auto fallback (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
802.11b support rate: 1M, 2M, 5.5M, 11Mbps
802.11a/g support rate: 6M, 9M, 12M, 18M, 24M, 36M, 48M, 54Mbps

Transmission distance:
Up to 100 meters (@ 11 Mbps, in open areas)

Security: WEP 64-bit/128-bit, WPA, WPA2 data encryption

Antenna Connector: Reverse SMA

Antenna: External 2 dbi Dipole Antenna

WLAN Mode: Ad-Hoc (802.11b/g only), Infrastructure

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection: Built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port: 4 software selectable RS-232/422/485 port f, DB9 connector

Protection: Built-in 15KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baud Rate

LEDs

System: Ready, SD

WLAN: Enable, Signal Strength

LAN: 10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input: 12 to 48 VDC

Power Consumption:
600mA@12VDC without loading USB ports,
1.2A@12VDC with loading 2 USB ports

Mechanical

Dimension (WxDxH):
150 x 100x 38 mm (without wall mount ear and antenna)

Weight: 390 g

Antenna: 110mm

Construction Material:
aluminum, 1 mm/ SECC, 1 mm for rear panel

Mounting:
Wall-mounting, DIN-rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC, CE (Class A)

Safety: TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System:JFFS2 (on-board flash)

System Utilities: : bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

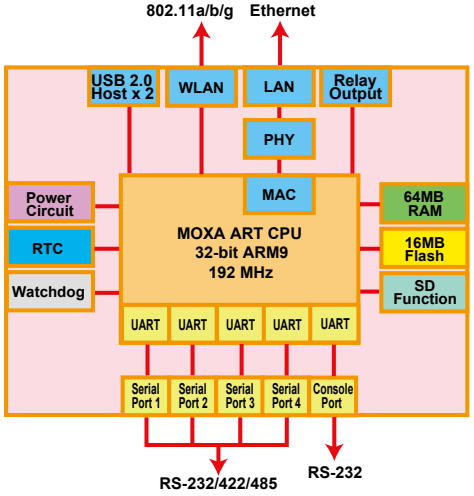
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc,Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

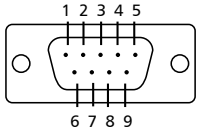
Device Drivers:SD Card, USB (supports USB flash disk),Watchdog Timer (WDT), UART, DO, RTC, Buzzer

H/W Block Diagram



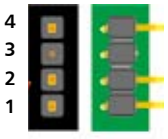
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W341-LX NEW

RISC-based Ready-to-Run Wireless Embedded Computer with WLAN, 4 Serial Ports, LAN, SD, USB, Relay Output, Linux OS

All items include

- 1 W341 embedded computer
- Quick Installation Guide
- Wall-mount Kit
- Document & Software CD
- WLAN Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore W315

New

Mini RISC-based Ready-to-Run Wireless Embedded Computers with GSM/GPRS, 1 Serial Port, LAN, and Linux OS

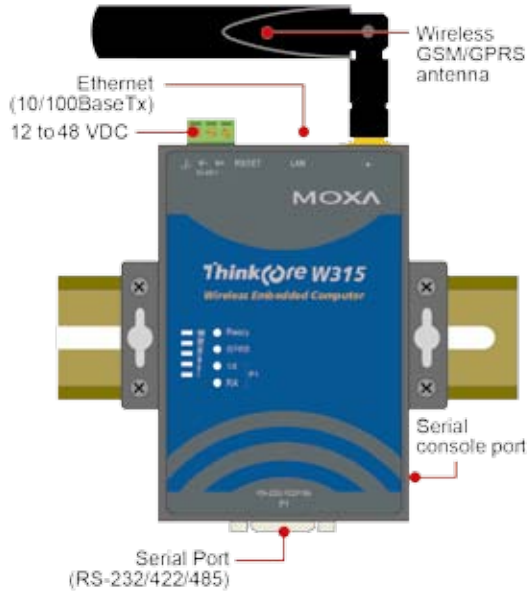
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 32 MB RAM, 16 MB flash disk
- Built-in quad band GSM/GPRS 850/900/1800/1900 MHz
- GPRS Class 10, Coding Scheme from CS1 to CS4 supported
- 1 software-selectable RS-232/422/485 serial port
- 10/100 Mbps Ethernet for network redundancy
- Designed to withstand continuous 5G vibrationa and 50G shock
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

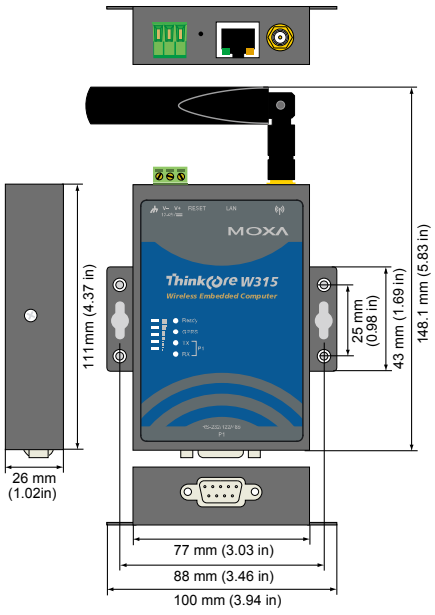
Overview

The ThinkCore W315 embedded computer features 1 software-selectable RS-232/422/485 serial port, 1 Ethernet port, and quad band GSM/GPRS 900/1800/850/1900 MHz for cellular communication. The MOXA ART 32-bit ARM9 processor and the built-in Linux operating system provide a powerful and reliable platform for any harsh, industrial environment, promising an ideal solution for wireless industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

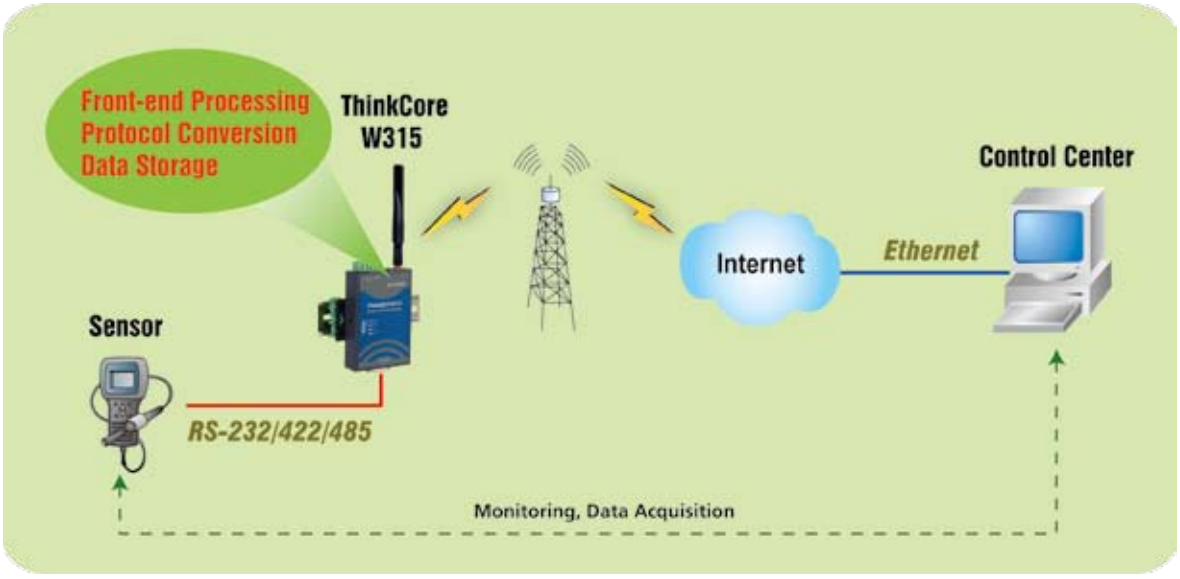
Appearance



Dimensions



Typical Application



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 32 MB

Flash: 16 MB

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

Cellular Communication

Cellular Mode:GSM, GPRS

Radio Frequency Band: 850/900/1800/1900 MHz

GPRS Class:10

Coding Schemes: CS1 to CS4

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection: Built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port: 1 software selectable RS-232/422/485 port, DB9 male connector

Protection: Built-in 15KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, support Any Baud Rate

LEDs

System: Ready

Cellular: GPRS Enable, GSM Signal Strength

LAN: 10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input: 12 to 48 VDC

Mechanical

Dimension: (WxDxH):
77 x 111 x 26 mm (without wall mount ear and antenna)

Weight: 195 g

Antenna: 110 mm

Construction Material: aluminum, 1 mm

Mounting:
Wall mounting, DIN-rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC, CE (Class A)

Safety: TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

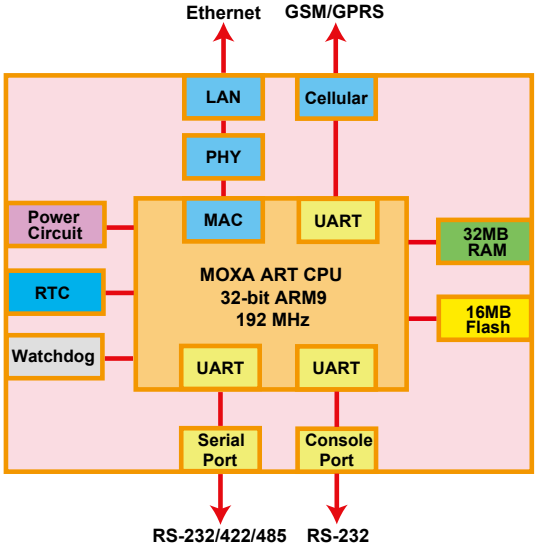
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc,
Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

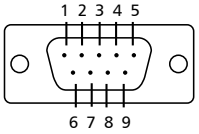
Device Drivers: UART, RTC, Buzzer

H/W Block Diagram



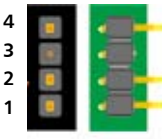
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W315-LX NEW

Mini RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 1 Serial Port, LAN, Linux OS

All items include

- 1 W315 embedded computer
- Quick Installation Guide
- Document & Software CD
- GSM/GPRS Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore W325

New

Mini RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 2 Serial Ports, LAN, SD, and Linux OS

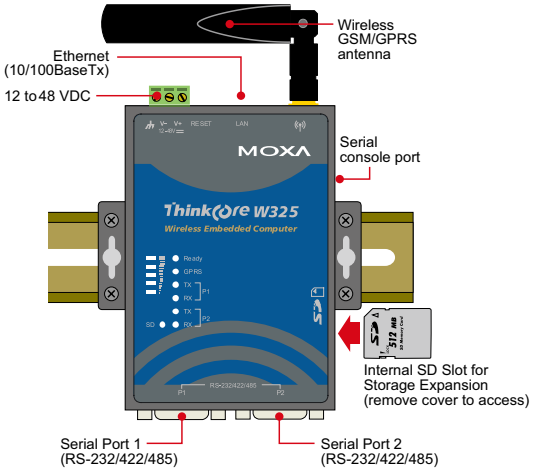
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 32 MB RAM, 16 MB flash disk
- Built-in quad band GSM/GPRS 850/900/1800/1900 MHz
- GPRS Class 10, Coding Scheme from CS1 to CS4 supported
- 2 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- Designed to withstand continuous 5G vibration and 50G shock
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

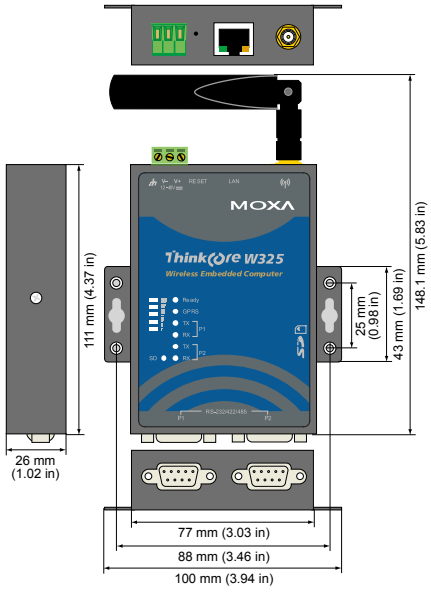
Overview

The ThinkCore W325 embedded computer features 2 software-selectable RS-232/422/485 serial ports, quad band GSM/GPRS 900/1800/850/1900 MHz for cellular communication, 1 Ethernet port, and an SD socket for external storage expansion. The MOXA ART 32-bit ARM9 processor and the built-in Linux operating system provide a powerful and reliable platform for any harsh, industrial environment, promising an ideal solution for industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

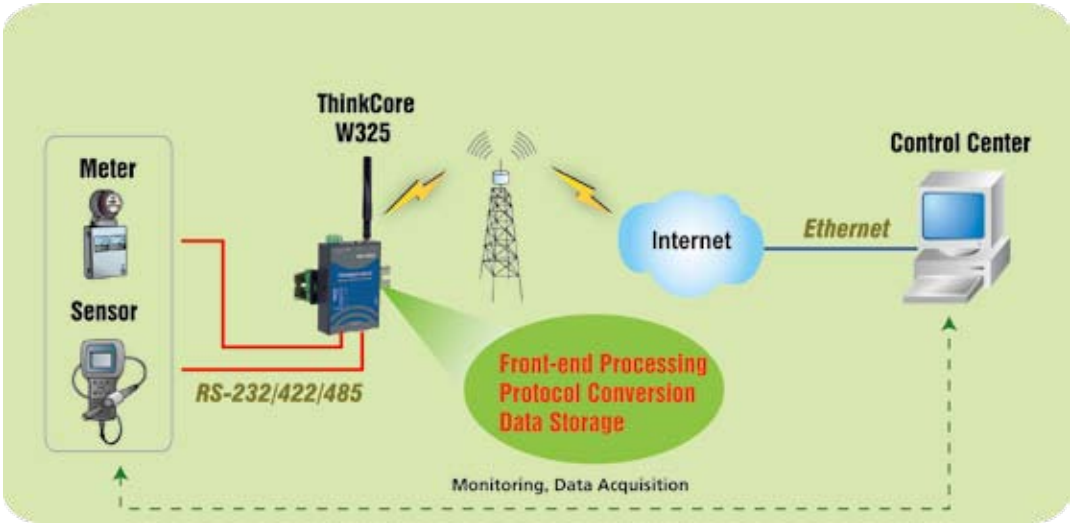
Appearance



Dimensions



Typical Application



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 32 MB

Flash: 16 MB

Storage Expansion: SD socket x 1 for storage expansion

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

Cellular Communication

Cellular Mode: GSM, GPRS

Radio Frequency Band: 850/900/1800/1900 MHz

GPRS Class: 10

Coding Schemes: CS1 to CS4

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection: Built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port: 2 software selectable RS-232/422/485 port , DB9 male connector

Protection: Built-in 15KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, support Any Baud Rate

LEDs

System: Ready, SD

Cellular: GPRS Enable, GSM Signal Strength

LAN: 10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input: 12 to 48 VDC

Mechanical

Dimension: (WxDxH):
77 x 111 x 26 mm (without wall mount ear and antenna)

Weight: 195 g

Antenna: 110 mm

Construction Material: aluminum, 1 mm

Mounting:
Wall mounting, DIN-rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC, CE (Class A)

Safety: TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

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snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

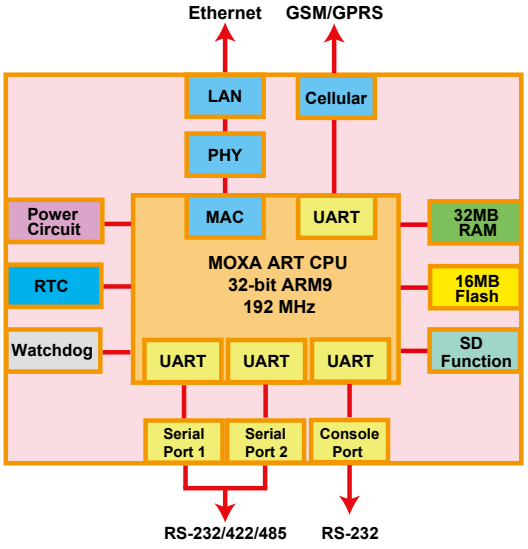
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

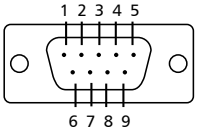
Device Drivers: SD Card, UART, RTC, Buzzer

H/W Block Diagram



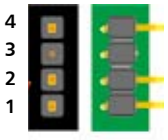
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W325-LX NEW

Mini RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 2 Serial Ports, LAN, SD, Linux OS

All items include

- 1 W325 embedded computer
- Quick Installation Guide
- Document & Software CD
- GSM/GPRS Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore W345

New

RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 4 Serial Ports, LAN, SD, USB, Relay Output, and Linux OS

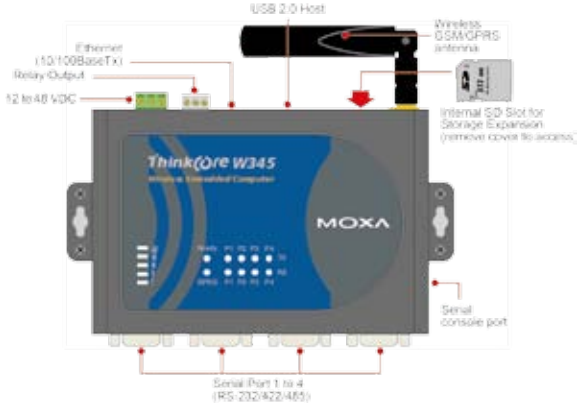
Features

- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 64 MB RAM, 16 MB flash disk
- Built-in quad band GSM/GPRS 850/900/1800/1900 MHz
- GPRS Class 10, Coding Scheme from CS1 to CS4 supported
- 4 software-selectable RS-232/422/485 serial ports
- 10/100 Mbps Ethernet for network redundancy
- Relay Output for external alarm connection
- Designed to withstand continuous 5G vibration and 50G shock
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

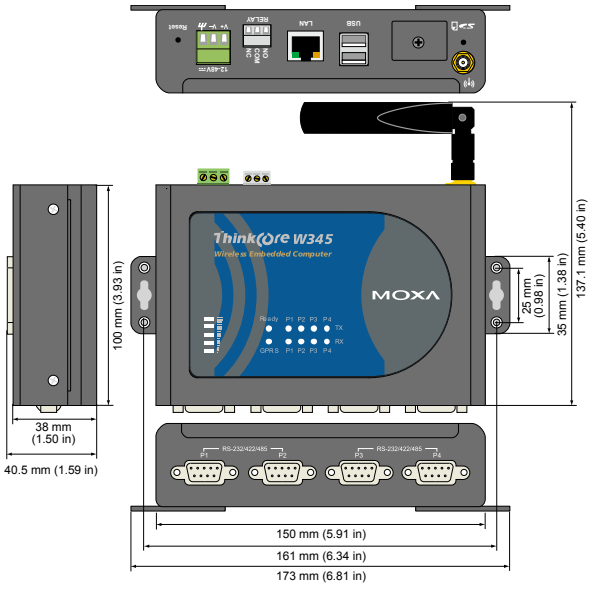
Overview

The ThinkCore W345 embedded computer features 4 software-selectable RS-232/422/485 serial ports, 802.11 a/b/g for WLAN communication, 1 Ethernet port, 2 USB 2.0 hosts, 1 relay output, and an SD socket for external storage expansion. The MOXA ART 32-bit ARM9 processor and the built-in Linux system provide a powerful and reliable platform for any harsh, industrial environment, promising an ideal solution for industrial M2M applications such as data acquisition, protocol conversion, and remote device control and monitoring.

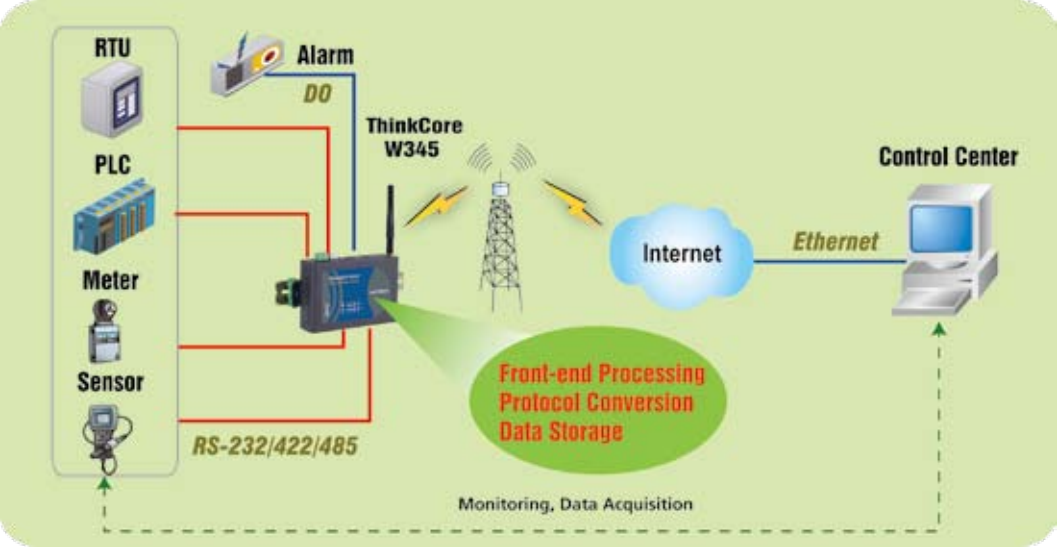
Appearance



Dimensions



Typical Application



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 64 MB

Flash: 16 MB

Storage Expansion: SD socket x 1 for storage expansion

USB: USB 2.0 Host x 2

Relay Output: Form C, SPD x 1
Normal Switching Capacity: 2A @ 30 VDC
Switching Power: 60W max.
Switching Voltage: 220 VDC max.
Switching Current: 2A max.
Operating Time: 4 ms @20°C
Initial Contact Resistance: 100 mohm max.

Console Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output

Button: Reset button x 1, support "Reset to Factory Default"

Others: RTC, buzzer, Watchdog Timer

OS: Built-in Embedded Linux with MMU support

Cellular Communication

Cellular Mode: GSM, GPRS

Radio Frequency Band: 850/900/1800/1900 MHz

GPRS Class:10

Coding Schemes:CS1 to CS4

Network Communication

LAN: Auto-sensing 10/100Mbps x 1, RJ45

Protection:built-in 1.5KV magnetic isolation protection

Serial Communication

Serial Port:4 software selectable RS-232/422/485 port, DB9 male connector

Protection:built-in 15KV ESD protection for all signals

Data bits:5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, support Any Baud Rate

LEDs

System: Ready, SD

Cellular: GPRS Enable, GSM Signal Strength

LAN:10M/Link (on connector), 100M/Link (on connector)

Serial: TxD, RxD

Power Requirements

Power Input:12 to 48 VDC

Mechanical

Dimension: (WxDxH):
150 x 100 x 38 mm (without wall mount ear and antenna)

Weight: 400 g

Antenna:110 mm

Construction Material:
aluminum, 1 mm / SECC, 1mm for top panel

Mounting:
Wall mounting, DIN-rail (optional, need DK35A DIN-rail kit)

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 5G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 50G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC:FCC, CE (Class A)

Safety:TÜV, UL, cUL

Others: RoHS, CRoHS, WEEE

Warranty:5 years

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS,SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

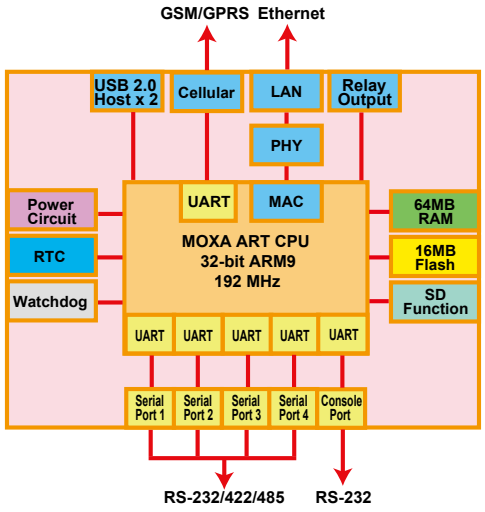
Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

BINEncryptor: Encryption tool for binary files; based on MOXA Intellectual Protection Technology (Patented)

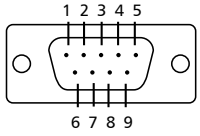
Device Drivers: SD Card, USB (supports USB flash disk), UART, DO, RTC, Buzzer

H/W Block Diagram



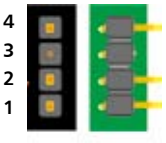
Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port



PIN	
1	TxD
2	RxD
3	NC
4	GND

Ordering Information

ThinkCore W345-LX NEW

RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 4 Serial Ports, Ethernet, SD, USB, Relay Output, Linux OS

All items include

- 1 W345 embedded computer
- Quick Installation Guide
- Wall-mount Kit
- Document & Software CD
- GSM/GPRS Antenna
- Ethernet cross-over cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100: 4-pin header to DB9 (Female) cable, 100 cm
- Universal Power Adaptor
- Product Warranty Statement

ThinkCore DA-660 Series

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers

RISC-based Ready-to-Run 19-inch
Rackmount Data Acquisition
Embedded Computers
DA-660/661/662/663
■ 19-inch, 1U and rackmount installation
■ 100 to 240V power input AC and DC
■ Embedded Linux or Windows CE 5.0

DA-660 Series Overview

The four ThinkCore DA-660 Series models (DA-660/661/662/663) are RISC-based, ready-to-run embedded computers designed for industrial data applications. The computers feature 8 or 16 RS-232/422/485 serial ports, multiple Ethernet or fiber ports, and are based on the Intel XScale IXP-422/425 communication processors. These great features are packed into a standard 1U, 19-inch wide rack-mounted rugged enclosure. The robust, rack-mountable mechanism design provides the hardened protection needed for industrial environment applications, and lets users easily install the embedded computers on a standard 19-inch rack. DA-660 embedded computers are not only suitable for the IT machine control room, but also for the critical assets found in the control and automation systems on industrial plant floors and in electric power utility substations. In order to make them suitable for many different industrial applications, the DA-660 embedded computers can accept a range of power inputs (from 100 to 240V, either AC or DC). Because of the no hard disk, fan-less, energy efficient design, DA-660 computers generate a minimal amount of heat, and can operate reliably 365/7/24 in heavy duty, harsh industrial environments to deliver strongly reliable, powerful computing. You can expect the kind of high performance required for multifunctional controller usage. In addition to the 8 or 16 serial ports, the DA-660 computers also come with PCMCIA, CompactFlash, and USB sockets for storage expansion, providing added convenience for customers who wish to expand storage capacity for data logging and recording.

You may choose from the pre-installed, ready-to-run, open standard Linux OS, or the more common WinCE OS for your software program development. The built-in SDK provides a convenient tool for developing control programs, and follows the common programming procedures used on a standard PC. The software you develop for your own applications can be stored in the onboard Flash memory. The DA-660 computers make it easy to build control systems with distributed architecture on embedded technologies such as for SCADA systems, plant floor automation, and power electricity monitoring.

Top Performance

The Intel XScale IXP-422 or IXP-425 processor provides high performance for data collection and data processing.

Ready-to-Run

The ready-to-run embedded Linux or Windows CE 5.0 operating system supports Windows Tool Chain, serial to Ethernet protocols, web server, database, middlewares, and drivers to reduce application program development effort. Software developers can easily port and upload their software to ThinkCore DA-660 Series embedded computers.

Robust File System

The Linux's JFFS2 and Windows CE's TFAT file systems can log all file access data with time stamp to prevent the file system from crashing when the system is writing data to the file system and the power shuts down.

100-240V AC/DC Power Inputs

The ThinkCore DA-660 Series supports 100-240V AC/DC power inputs; this is particularly beneficial since they can be implemented in various applications, such as power substation automation and power monitoring.

19-inch, 1U and Rackmount Design

The standard 19-inch, 1U and rackmount design makes it easy to install the DA-660 computers, and provides the hardened protection needed for industrial environments.

Powerful Serial Communication

DA-660 computers come with 8 or 16 software-selectable RS-232/422/485 serial ports that support a communication speed of 50 to 921.6 Kbps. As an added benefit, all DA-660 Series serial ports support Any Baudrate.

Powerful Network Communication

DA-660 computers come with 2 or 4 Ethernet ports, or 2 multi-mode fiber ports. Multiple network interfaces not only provide more options for device connection, but also provide a convenient way to build system redundant architecture. By adding the appropriate interface card, the PCMCIA slot can be used to support fixed LAN, WLAN, and even cellular communication connections.

Various Storage Options

DA-660 Series computers come with CompactFlash and USB ports, making the DA-660 Series convenient as a control unit for storage expansion and data logging.

LCM Display and Keypad

The LCM display and keypad on the DA-660's top panel is useful for on-site configuration and troubleshooting.

Reliability

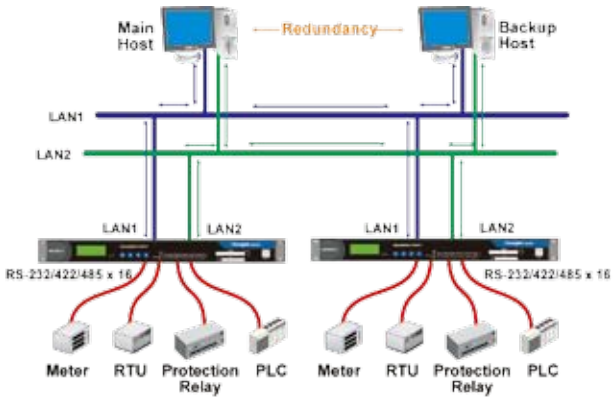
The fanless, low power consumption, no moving part design increases reliability, allowing the DA-660 to operate reliably 24 hours a day, 365 days a year.

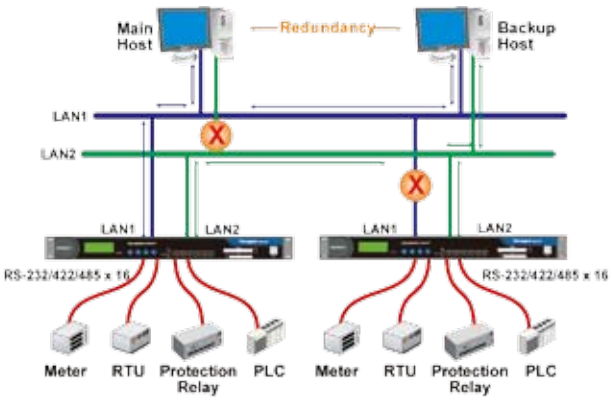
5-year Warranty

The DA-660 comes with Moxa's solid 5-year warranty, which is 2.5 times longer than the traditional 2-year warranty for industrial PCs.

Typical Application

DA-660 Series' redundant networking can be used for electric utility substations and factory floor automation.





ThinkCore DA-660 Series Product Comparison Chart

Model Name	DA-660-8	DA-660-16	DA-661-16	DA-662-16	DA-663-16
CPU	Intel XScale IXP-422 266 MHz	Intel XScale IXP-422 266 MHz	Intel XScale IXP-425 533 MHz	Intel XScale IXP-425 533 MHz	Intel XScale IXP-425 533 MHz
RAM	128 MB	128 MB	128 MB	128 MB	128 MB
Flash	32 MB	32 MB	32 MB	32 MB	32 MB
OS	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0	Linux, WinCE 5.0
Network Interface	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 2 RJ45 Connector	10/100 Mbps x 4 RJ45 Connector	100Base Multi-Mode x 2 SC Connector
Serial Port	RS-232/422/485 x 8 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector	RS-232/422/485 x 16 RJ45 Connector
Serial Protection	15 KV ESD for all signals				
Data Bits	1, 1.5, 2				
Stop Bits	5, 6, 7, 8				
Parity	none, even, odd, space, mark				
Flow Control	RTS/CTS, XON/XOFF, RS-485 ADDC™				
Speed	50 bps to 921.6 Kbps, supporting ANY BAUDRATE				
Serial Console	RS-232 x 1 RJ45 Connector				
USB 2.0 Host	N/A	N/A	2*	2*	2*
PCMCIA	N/A	N/A	Cardbus x 1**	Cardbus x 1**	Cardbus x 1**
Storage Expansion	N/A	N/A	CompactFlash x 1***	CompactFlash x 1***	CompactFlash x 1***
LCM	2 x 16 Text Mode				
Keypad	4	4	4	4	4
Real Time Clock	Yes	Yes	Yes	Yes	Yes
Buzzer	Yes	Yes	Yes	Yes	Yes
Watchdog Timer	Yes	Yes	Yes	Yes	Yes
Reset Button	Reset x 1	Reset x 1	Reset x 1	Reset x 1	Reset x 1
Power Input	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC	100 to 240V AC/DC
Power Consumption	15W	15W	20W	20W	20W
Dimensions (W x D x H)	480 x 198 x 45 mm (with rackmount ears) 440 x 198 x 45 mm (w/o rackmount ears)				
Weight	2.6 kg	2.6 kg	2.6 kg	2.6 kg	2.6 kg
Operating Temperature	-10 to 60°C (14 to 140°F) 5 to 95% RH				
Storage Temperature	-20 to 80°C (-4 to 176°F) 5 to 95% RH				
Regulatory Approvals	EMC: CE Class A, FCC Class A; Safety: UL, cUL, TÜV				
Warranty	5 years	5 years	5 years	5 years	5 years

* USB 2.0 Host is designed for storage expansion.
**PCMCIA is designed for 802.11b/g wireless LAN card expansion.
** CompactFlash is designed for Flash memory card expansion.

ThinkCore DA-660

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 8/16 Serial Ports, Dual LANs

Features

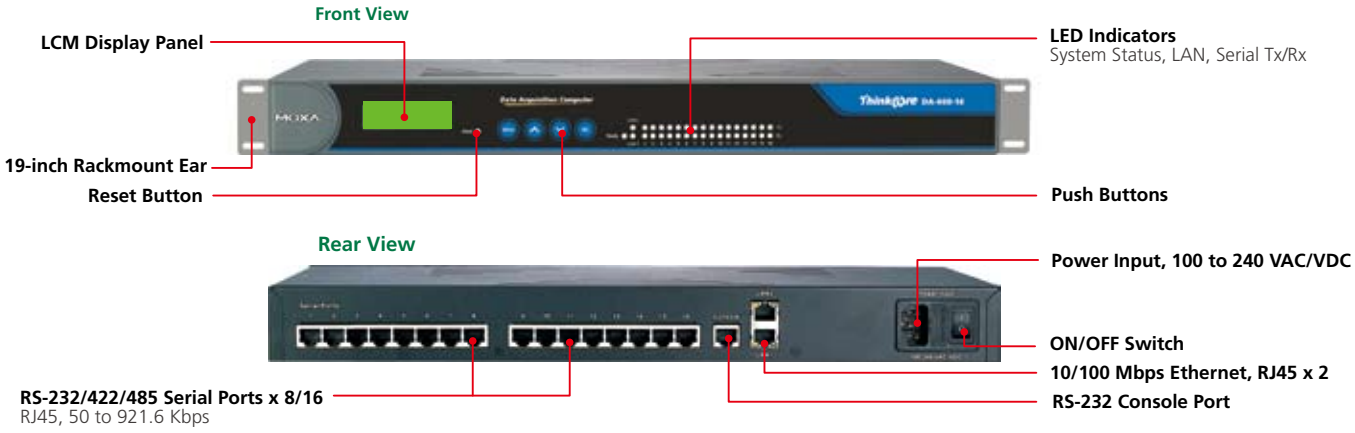
- Intel XScale IXP-422 266 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 8/16 RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet
- Standard 19-inch rackmount installation, 1U height
- Wide range of power input voltages from 100 to 240V, both AC and DC
- LCM display and keypad for HMI
- Ready-to-Run Linux / Window CE 5.0 platform
- Robust, fanless design

Windows CE 5.0

Overview

ThinkCore DA-660 embedded computers come with 8/16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and two 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-660 is designed with a standard 19-inch, 1U rackmount rugged enclosure, and is embedded with a 100-240V AC/DC power input. The combination of features gives users an ideal, robust, and reliable solution for ready-to-run applications such as data acquisition and power substations.

DA-660 Appearance

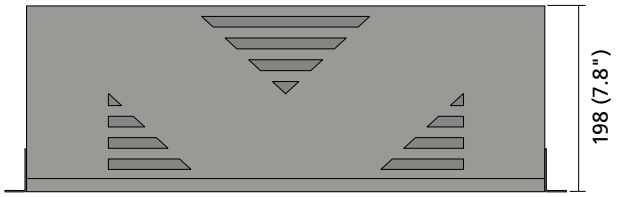


Dimensions

Unit = mm (in)

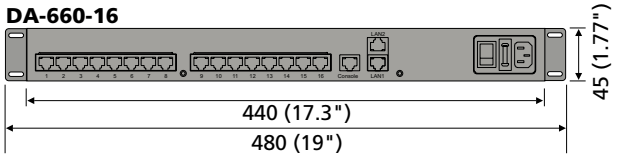
DA-660-8

DA-660-16



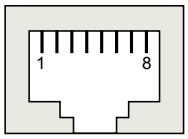
DA-660-8

DA-660-16



Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Hardware Specifications

System

CPU: Intel XScale IXP-422 266 MHz

DRAM: 128 MB onboard

Flash: 32 MB onboard

LCM: 2 x 16 Text Mode

Keypad: 4 membrane buttons

Console Port: RS-232 x 1, RJ45, support PPP

Other: RTC, buzzer, Watchdog Timer

OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

LAN: 10/100 Mbps x 2, RJ45

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Ports: RS-232/422/485 x 16, software-selectable, RJ45, (8 for DA-660-8)

Protection: Built-in 15 KV ESD protection for all signals

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1

LAN: 10M/100M x 2

Serial: TxD x 16, RxD x 16 (8 for DA-660-8)

Power Requirements

Power Input: 100 to 240 VAC/VDC auto ranging (47 to 63 Hz for AC input)

Power Consumption: 12W

Mechanical

Dimensions (WxDxH):
480 x 198 x 45 mm (19 x 7.8 x 1.77 in) (including rackmount ears)
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in) (without rackmount ears)

Weight: 2.6 kg

Construction Material: SECC sheet metal, 1 mm

Mounting: Standard 19-inch rackmount

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A

CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

Safety: TÜV: IEC/EN60950

UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.4.18

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

MySQL: Database Server and Client

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad

MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File Systems: TFAT (on-board flash)

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

MOXA WinCE 5.0 SDK

C Libraries and Run-times

Component Services (COM and DCOM)

Microsoft Foundation Classes (MFC)

Microsoft® .NET Compact Framework

XML, including DOM, XQL, XPATH, XSLT, SAX2

SOAP Toolkit

Winsock 2.2

Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

Ordering Information

ThinkCore DA-660-16-LX

RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, Linux OS

ThinkCore DA-660-16-CE

RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, WinCE 5.0

ThinkCore DA-660-8-LX

RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, Linux OS

ThinkCore DA-660-8-CE

RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, WinCE 5.0

All items include

- 1 DA-660
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement

ThinkCore DA-661

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash and USB

Features

- Intel XScale IXP-425 533 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 16 software-selectable RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- 15 KV ESD surge protection for all serial signals
- Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- CompactFlash and USB slots for storage expansion
- Standard 19-inch rackmount, 1U height installation
- Wide range of power input voltages from 100 to 240V AC/DC
- LCM display and keypad for HMI
- Ready-to-run Linux / Windows CE 5.0 platform
- Robust, fanless design

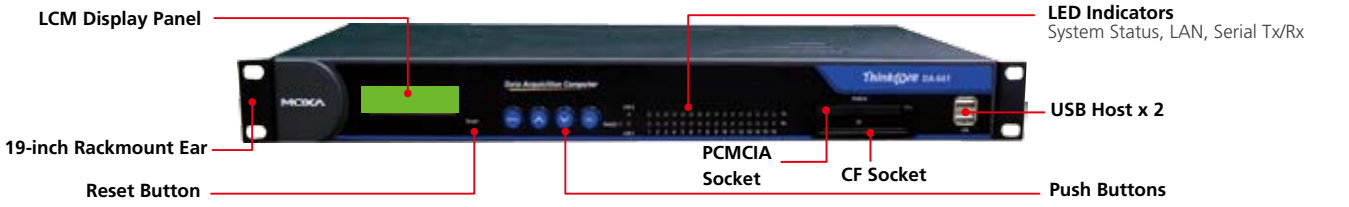
Windows CE 5.0

Overview

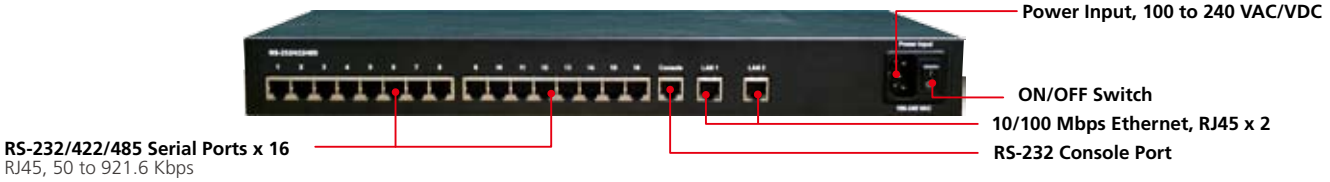
ThinkCore DA-661 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and two 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-661 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion, and the CompactFlash and USB sockets make it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

DA-661 Appearance

Front View



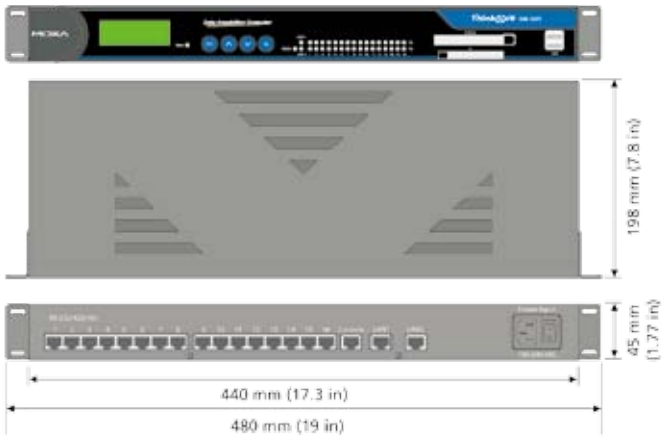
Rear View


Power Input, 100 to 240 VAC/VDC
ON/OFF Switch
10/100 Mbps Ethernet, RJ45 x 2
RS-232 Console Port
RS-232/422/485 Serial Ports x 16
RJ45, 50 to 921.6 Kbps

Dimensions

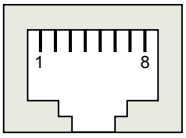
Unit = mm (in)

DA-661



Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz
DRAM: 128 MB onboard
Flash: 32 MB onboard
LCM: 2 x 16 Text Mode
Keypad: 4 membrane buttons
Console Port: RS-232 x 1, RJ45, supports PPP
Other: RTC, buzzer, Watchdog Timer
OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

LAN: 10/100 Mbps x 2 , RJ45
Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Ports: RS-232/422/485 x 16, software-selectable, RJ45
Protection: Built-in 15 KV ESD protection for all signals
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1
LAN: 10M/100M x 2
Serial: TxD x 16, RxD x 16

Power Requirements

Power Input: 100 to 240 VAC/VDC auto ranging
(47 to 63 Hz for AC input)
Power Consumption: 20W

Mechanical

Dimensions (WxDxH):
480 x 198 x 45 mm (19 x 7.8 x 1.77 in)
(including rackmount ears)
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in)
(without rackmount ears)
Weight: 2.6 kg
Construction Material: SECC sheet metal, 1 mm
Mounting: Standard 19-inch rackmount

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F),
5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A,
EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, support PHP and XML

MySQL: Database Server and Client

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad

MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File Systems: TFAT (on-board flash)

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

MOXA WinCE 5.0 SDK

C Libraries and Run-times

Component Services (COM and DCOM)

Microsoft Foundation Classes (MFC)

Microsoft® .NET Compact Framework

XML, including DOM, XQL, XPATH, XSLT, SAX2

SOAP Toolkit

Winsock 2.2

Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

Ordering Information

ThinkCore DA-661-16-LX

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, Linux OS

ThinkCore DA-661-16-CE

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, WinCE 5.0

All items include

- 1 DA-661
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement

ThinkCore DA-662

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash and USB

Features

- > Intel XScale IXP-425 533 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 16 software-selectable RS-232/422/485 serial ports
- > Quad 10/100 Mbps Ethernet for network redundancy
- > 15 KV ESD surge protection for all serial signals
- > Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- > CompactFlash and USB slots for storage expansion
- > Standard 19-inch rack-mount, 1U height installation
- > Wide range of power input voltages from 100 to 240V AC/DC
- > LCM display and keypad for HMI
- > Ready-to-run Linux / Windows CE 5.0 platform
- > Robust, fanless design

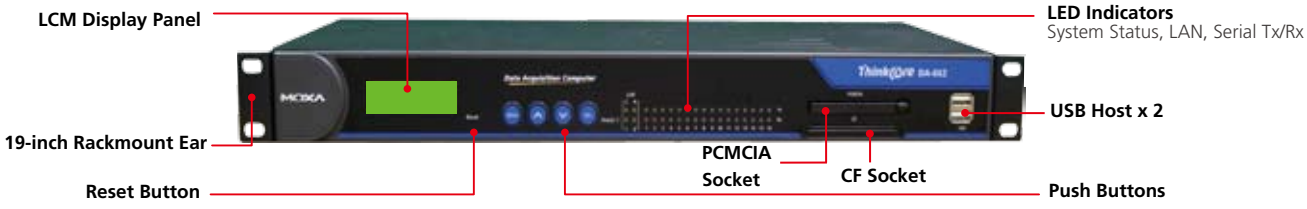
Windows CE 5.0

Overview

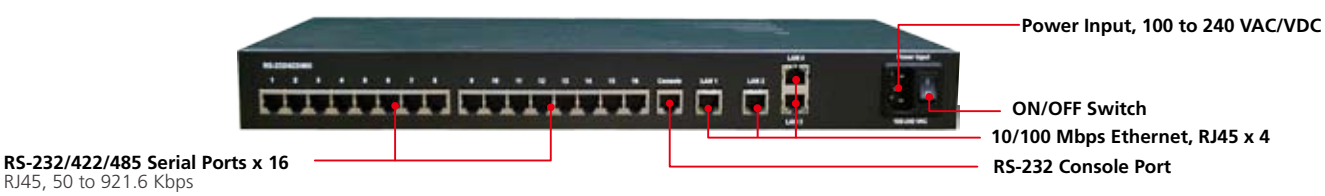
ThinkCore DA-662 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and four 10/100 Mbps Ethernet ports are included for network redundancy. In addition, the DA-662 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion, and the CompactFlash and USB sockets make it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

DA-662 Appearance

Front View



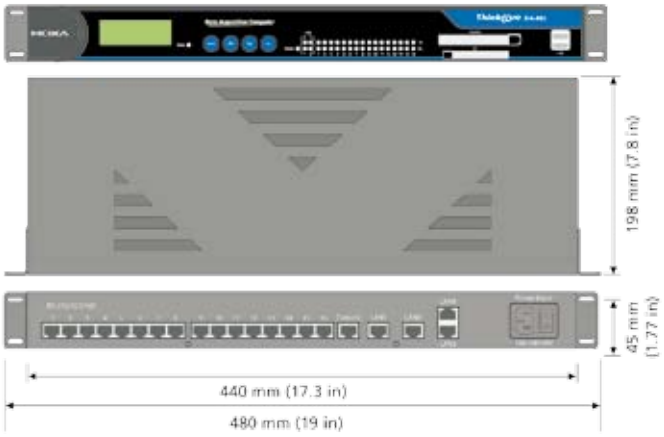
Rear View


Power Input, 100 to 240 VAC/VDC
ON/OFF Switch
10/100 Mbps Ethernet, RJ45 x 4
RS-232 Console Port
RS-232/422/485 Serial Ports x 16
RJ45, 50 to 921.6 Kbps

Dimensions

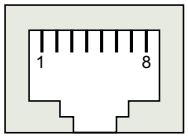
Unit = mm (in)

DA-662



Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz
DRAM: 128 MB onboard
Flash: 32 MB onboard
LCM: 2 x 16 Text Mode
Keypad: 4 membrane buttons
Console Port: RS-232 x 1, RJ45, supports PPP
Other: RTC, buzzer, Watchdog Timer
OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

LAN: 10/100 Mbps x 4 , RJ45
Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Ports: RS-232/422/485 x 16, software-selectable, RJ45
Protection: Built-in 15 KV ESD protection for all signals
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1
LAN: 10M/100M x 4
Serial: TxD x 16, RxD x 16

Power Requirements

Power Input: 100 to 240 VAC/VDC auto ranging
(47 to 63 Hz for AC input)
Power Consumption: 20W

Mechanical

Dimensions (WxDxH):
480 x 198 x 45 mm (19 x 7.8 x 1.77 in)
(including rackmount ears)
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in)
(without rackmount ears)
Weight: 2.6 kg
Construction Material: SECC sheet metal, 1 mm
Mounting: Standard 19-inch rackmount

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F),
5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A,
EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, supports PHP and XML

MySQL: Database Server and Client

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

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Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad

MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File Systems: TFAT (on-board flash)

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

MOXA WinCE 5.0 SDK

C Libraries and Run-times

Component Services (COM and DCOM)

Microsoft Foundation Classes (MFC)

Microsoft® .NET Compact Framework

XML, including DOM, XQL, XPATH, XSLT, SAX2

SOAP Toolkit

Winsock 2.2

Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

Ordering Information

ThinkCore DA-662-16-LX

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS

ThinkCore DA-662-16-CE

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, WinCE 5.0

All items include

- 1 DA-662
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement

ThinkCore DA-663

RISC-based 19-inch Rackmount Data Acquisition Embedded Computers with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash and USB

Features

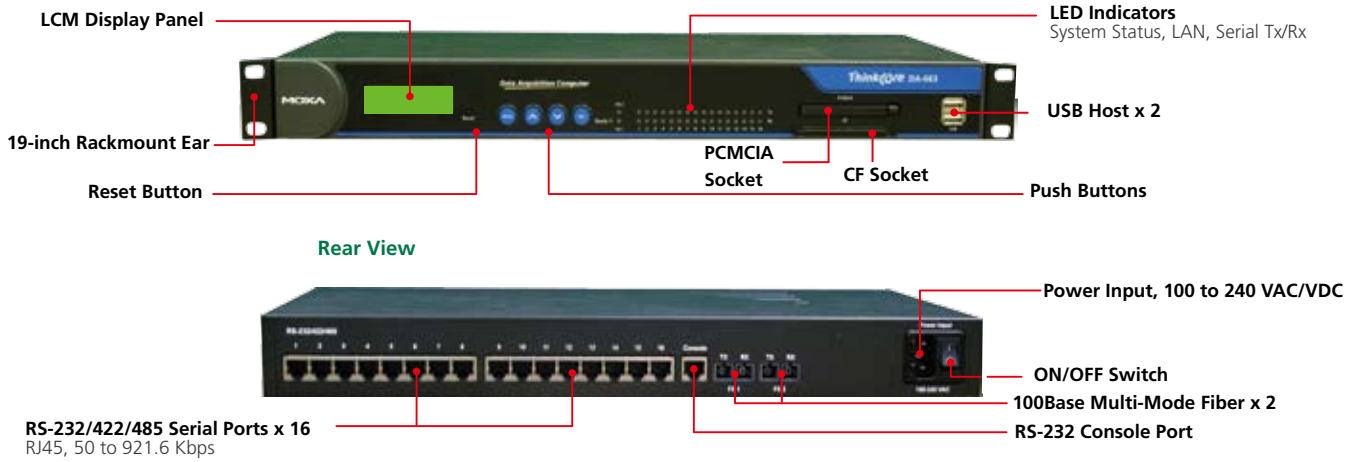
- > Intel XScale IXP-425 533 MHz processor
- > 128 MB RAM on-board, 32 MB flash disk
- > 16 software-selectable RS-232/422/485 serial ports
- > Dual 100Base Multi-mode Fiber ports
- > 15 KV ESD surge protection for all serial signals
- > Supports PCMCIA CardBus for WLAN 802.11b/g wireless network
- > CompactFlash and USB slots for storage expansion
- > Standard 19-inch rackmount, 1U height installation
- > Wide range of power input voltages from 100 to 240V AC/DC
- > LCM display and keypad for HMI
- > Ready-to-run Linux / Windows CE 5.0 platform
- > Robust, fanless design

Overview

ThinkCore DA-663 embedded computers come with 16 software-selectable RS-232/422/485 serial ports, making them suitable for a variety of industrial applications, and dual 100Base Multi-mode Fiber ports for network redundancy. In addition, the DA-663 has a PCMCIA socket to provide 802.11 b/g wireless LAN card expansion. and the CompactFlash and USB sockets it easy to expand data capacity. The combination of features gives users an ideal, robust, and reliable solution for harsh industrial environments.

DA-663 Appearance

Front View



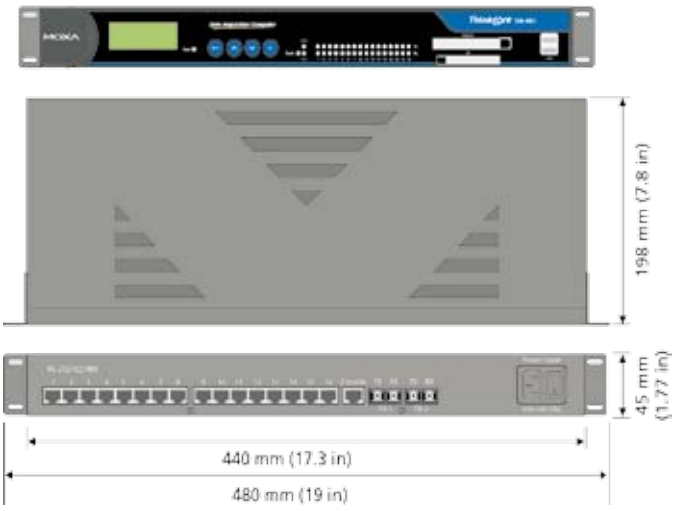
Rear View

Power Input, 100 to 240 VAC/VDC
ON/OFF Switch
100Base Multi-Mode Fiber x 2
RS-232 Console Port
RS-232/422/485 Serial Ports x 16
RJ45, 50 to 921.6 Kbps

Dimensions

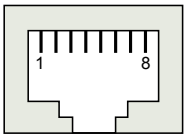
Unit = mm (in)

DA-663



Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz
DRAM: 128 MB onboard
Flash: 32 MB onboard
LCM: 2 x 16 Text Mode
Keypad: 4 membrane buttons
Console Port: RS-232 x 1, RJ45, supports PPP
Other: RTC, buzzer, Watchdog Timer
OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

Optical Fiber: 100Base Multi-mode Fiber ports x 2
SC connector
Link Distance: Up to 2 km
Optical Wavelength: 1,300 nm typical
Data Rate: 155 Mbps

Serial Communication

Serial Ports: RS-232/422/485 x 16, software-selectable, RJ45
Protection: Built-in 15 KV ESD protection for all signals
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1
Fiber: 100Base FX x 2
Serial: TxD x 16, RxD x 16

Power Requirements

Power Input: 100 to 240 VAC/VDC auto ranging
(47 to 63 Hz for AC input)
Power Consumption: 20W

Mechanical

Dimensions (WxDxH):
480 x 198 x 45 mm (19 x 7.8 x 1.77 in)
(including rackmount ears)
440 x 198 x 45 mm (17.3 x 7.8 x 1.77 in)
(without rackmount ears)
Weight: 2.6 kg
Construction Material: SECC sheet metal, 1 mm
Mounting: Standard 19-inch rack-mount

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F),
5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A,
EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, supports PHP and XML

MySQL: Database Server and Client

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad

MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File Systems: TFAT (on-board flash)

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Supporting Services and Daemons:

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

Web Server (httpd): WinCE IIS, offering ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

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C Libraries and Run-times

Component Services (COM and DCOM)

Microsoft Foundation Classes (MFC)

Microsoft® .NET Compact Framework

XML, including DOM, XQL, XPATH, XSLT, SAX2

SOAP Toolkit

Winsock 2.2

Device Drivers:

Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

Ordering Information

ThinkCore DA-663-16-LX

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual Multi-mode Fiber, LAN, PCMCIA, CompactFlash, USB, Linux OS

ThinkCore DA-663-16-CE

RISC-based 19-inch Rackmount Data Acquisition Embedded Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, WinCE 5.0

All items include

- 1 DA-663
- Quick Installation Guide
- 19-inch Rackmount Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Power Cord
- Product Warranty Statement

ThinkCore IA241/IA240

RISC-based Industrial Ready-to-Run Embedded Computers with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD

Wide Temperature

TAIWAN EXCELLENCE 2006

Features

- MOXA ART 32-bit ARM9 industrial processor
- On-board 64 MB RAM, 16 MB flash disk
- 4 RS-232/422/485 serial ports
- 4-ch digital input and 4-ch digital output
- Dual 10/100Mbps Ethernet for network redudancy
- PCMCIA supports wireless expansion (802.11b/g, GPRS/UMTS/HSDPA)
- SD socket for storage expansion supported
- Ready-to-run Linux Kernel 2.6 platform
- Unique patented Software Encryption Lock
- Industrial DIN-rail installation, wall-mount is also possible
- Robust, fanless design, IP30 protection mechanism
- -40 to 75°C wide temperature model available

Overview

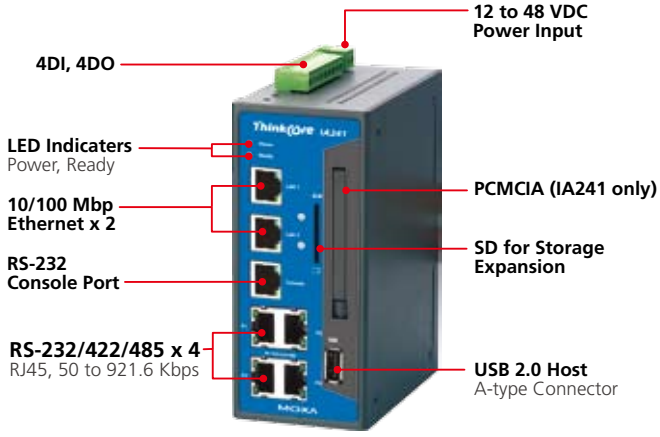
ThinkCore IA241/IA240 embedded computers for industrial automation feature 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, and a PCMCIA cardbus and SD socket in a compact, IP30 protected, industrial-strength rugged chassis.

The DIN-Rail vertical form factor is cost effective for users to install the IA241/IA240 into a small cabinet. This space-saving solution also facilitates easy wiring, and is the best choice of front-end embedded controller for industrial applications.

In addition to the standard model, ThinkCore IA241/IA240 also comes in wide temperature models. IA241-T and IA240-T fit the -40 to 75°C operating temperature range, and are appropriate for harsh industrial automation environments.

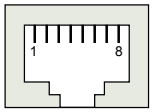
The industrial mechanism of the ThinkCore IA241/IA240 design provides robust, reliable computing. Due to the RISC-based architecture, ThinkCore IA241/IA240 will not generate too much heat while being used. The high communication performance and fanless design make the IA241/IA240 ideal for industrial automation environments.

Appearance



Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Terminal Block on Top

Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz

DRAM: 64 MB onboard (optional 128 MB for IA241 ODM)

Flash: 16 MB onboard (optional 32 MB for IA241 ODM)

DI/DO: DI x 4, DO x 4, TTL (3.3 v)

PCMCIA: Cardbus card and 16-bit PCMCIA 2.1/ JEIDA 4.2 card (IA241 only)

Storage Expansion: SD socket x 1

USB: USB 2.0 host x 1

Console Port: RS-232 x 1, RJ45, support PPP

Other: RTC, buzzer, Watch Dog Timer

OS: Built-in embedded Linux

Network Communication

LAN: 10/100 Mbps x 2, RJ45

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: RS-232/422/485 x 4, software-selectable, RJ45

Protection: Built-in 15 KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Power x 1, Ready x 1

LAN: 10M/Link x 2, 100M/Link x 2 (on connector)

Serial: TxD x 4, RxD x 4 (on connector)

Power Requirements

Power Input: 12 to 48 VDC

Power Consumption: 7W

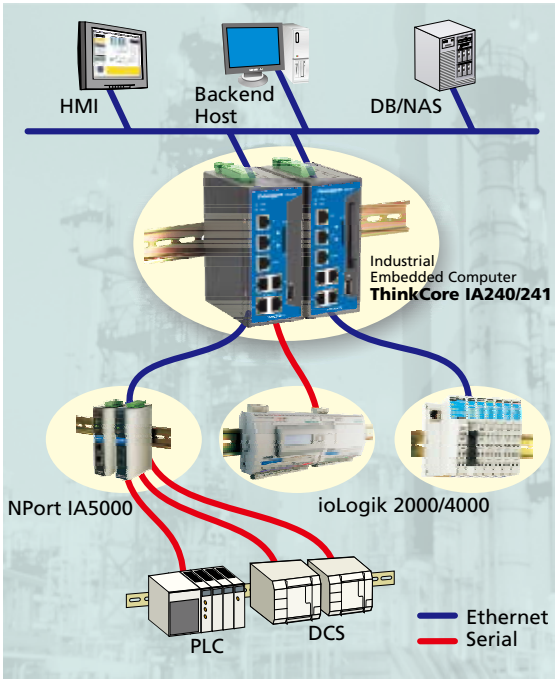
Mechanical

Dimensions (WxDxH): 60 x 100 x 137 mm (2.36 x 3.94 x 5.39 in)

Weight: 500 g (IA241), 430 g (IA240)

Construction Material: aluminum, 1 mm

MOXA Industrial Automation Solution



Mounting: DIN-Rail, Wall-mounting

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH
-40 to 75°C (-40 to 167°F) is optional for -T models

Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH
-40 to 85°C (-40 to 185°F) is optional for -T models

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A

CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00

Software Specifications

Linux

Kernel Version: 2.6.9

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon
ftpd: FTP server daemon
sshd: Secure shell server
Apache: Web server daemon
OpenVPN: Virtual private network service manager
iptables: Firewall service manager
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library
Linux Tool Chain: Gcc, Glibc, GDB
Windows Tool Chain: Gcc, Glibc,
Insight (Windows-based source level debug utility)

Software Encryption Lock:

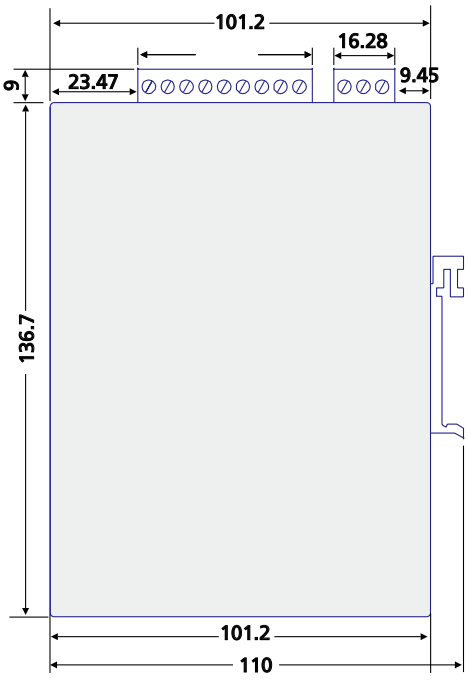
BINEncryptor: Encryption tool for binary files; based on the patented MOXA Intellectual Technology

Device Drivers:

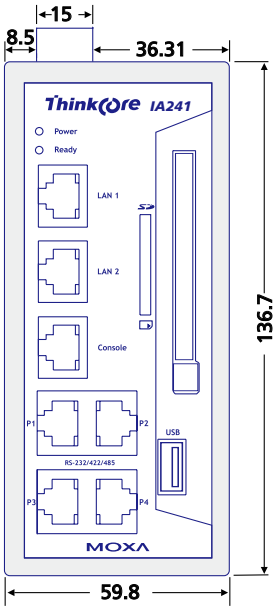
PCMCIA CardBus (supports 802.11b/g wireless LAN Card), SD Card, USB (supports USB flash disk), Watchdog Timer (WDT), UART, DI/DO, RTC, Buzzer

Dimensions

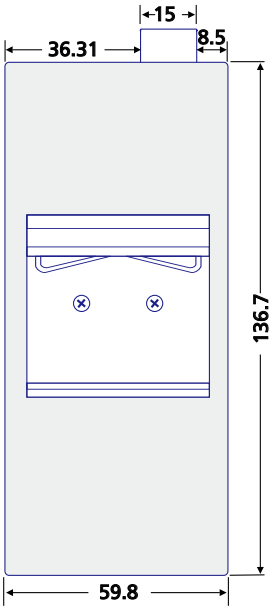
Unit = mm



Side View



Front View



Rear View

Ordering Information

Standard Operating Temperature Models (-10 to 60°C)

ThinkCore IA241-LX

RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS

ThinkCore IA240-LX

RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS

Wide Operating Temperature Models (-40 to 75°C)

ThinkCore IA241-T-LX

RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, Wide Temperature

ThinkCore IA240-T-LX

RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, Wide Temperature

All items include

- 1 IA241 or IA240
- Quick Installation Guide
- Wall-Mounting Kit
- DIN-Rail Mounting Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

ThinkCore V481

Coming Soon

x86 Ready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CompactFlash, USB, Audio

Features

- Intel Celeron M 1GHz CPU, 400 HMz FSB
- On-board 256 MB DDR SRAM, 128 MB CompactFlash
- 8 software-selectable RS-232/422/485 serial ports
- Serial port speed from 50 bps to 921.6 Kbps, supporting ANY BAUDRATE
- Dual 10/100 Mbps Ethernet for network redundancy
- Supports 2nd CompactFlash socket for storage expansion
- 2 USB 2.0 Hosts support system bootup
- LED indicators for System Ready and Storage
- Ready-to-run WinCE 5.0 platform
- DIN-rail or wall-mount installtion
- Robust, fanless design

Windows CE 5.0

Overview

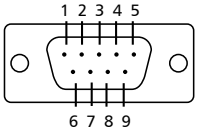
ThinkCore V481 is a ready-to-run embedded computer with VGA, dual LANs, 8 serial ports, CompactFlash, USB and audio, based on Intel x86 processor. With the VGA interface, it is especially designed for the industrial applications, such as SCADA and factory automation.

Built in with 8 software-selectable RS-232/422/485 serial ports, ThinkCore V481 is the ideal unit for connecting with different devices. Meanwhile, the dual 10/100 Mbps LAN ports offer a reliable solution for network redundancy, promising a continuous operation for the data communication and management. Besides, the second CompactFlash socket makes it easier for storage expansion, and USB slots can connect different devices, making ThinkCore V481 an reliable embedded computer for the related industrial applications that require VGA and HMI features.

Furthermore, ThinkCore V481 has been pre-installed with Windows CE 5.0 operation system, ensuring an friendly environment for programmers to developed related application softwares. With Moxa's great software support, programmers find it easy and simple to reduce the cost and time for software development, making ThinkCore V481 an optimal choice for any industrial applications.

Pin Assignment

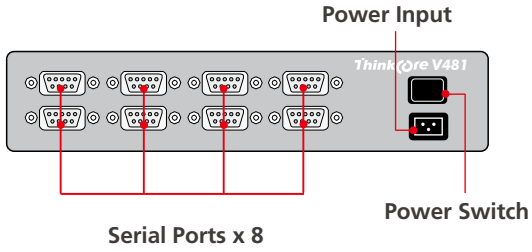
Serial Port Male DB9



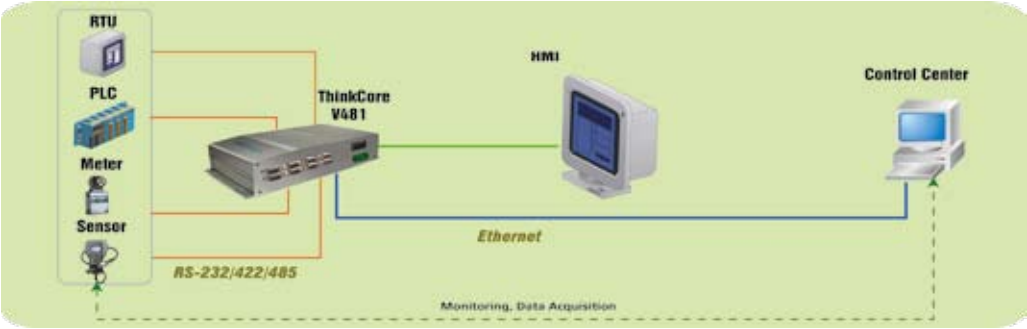
PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Panel

Front View Panel



Typical Application



Hardware Specifications

System

CPU: Intel ULV Celeron M 1 GHz processor
System Chipset: Intel 852GM GMCH +ICH4 chipset
FSB: 400 MHz
BIOS: 4Mbit Flash BIOS, supports Plug & Play
System Memory: 200-pin SO-DIMM socket x 1 with built-in 256 MB DDR SDRAM, support DDR200/266 up to 1GB
Support OS: Windows CE 5.0

Display

Graphical Controller:
Integrated graphics with built-in Intel 852GM GMCH, built-in Intel extreme Graphics 2 technology
Display Memory:
Dynamic video memory, share system memory up to 32 MB
Display Interface: CRT

Storage

Built-in: 128 MB CompactFlash onboard to store OS
Expansion: Second CompactFlash socket available for storage expansion

Network Communication

LAN1: Auto-sensing 10/100 Mbps Ethernet, using Integrated MAC and Intel 82562GZ Transceiver, RJ45 connector
LAN2: Auto-sensing 10/100/1000 Mbps Gigabit Ethernet, using Realtek RTL8110SC Controller, RJ45 connector
Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port:
RS-232/422/485 x 8, software-selectable, DB9 male connector
RS-232 signals: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
RS-422 signals: TxD+, TxD-, RxD+, RxD-, GND
4-wire RS-485 signals: TxD+, TxD-, RxD+, RxD-, GND
2-wire RS-485 signals: Data+, Data-, GND
Protection: Built-in 15 KV ESD protection for all signals

Data bits: 5, 6, 7, 8
Stop bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

Other Peripherals

USB: USB 2.0 compliant Host x 2, type A connector
Audio: AC97 audio, support line-in and speaker-out interface
KB/MS: 1 PS/2 interface support standard PS/2 keyboard and PS/2 mouse via Y type cable
Watchdog Timer: Support 1 ~ 255 level time interval system reset, software programmable
RTC: Yes, battery backup

LEDs

System: Ready x 1, Storage x 1
LAN: 10M/Link x 2 (on connector), 100M/Link x 2 (on connector)

Switch and Button

Switch: Power on/off x 1
Button: Reset button for system warm reboot x 1

Power Requirements

Power Input: 9 to 36 VDC

Mechanical

Dimensions (with Enclosure, WxDxH):
230 x 140 x 70 mm (without wall mount ear)
Construction Material: aluminum
Mounting: Wall-mounting, DIN-rail

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC, CE (Class A)
Safety: TÜV, UL, cUL
Others: RoHS, WEEE
Warranty: 5 years

Ordering Information

ThinkCore V481-CE Coming Soon
x86 Ready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CF, USB, Audio, WinCE 5.0

UC-7420/UC-7410

RISC-based Ready-to-Run Embedded Computer with 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash

Features

- Intel XScale IXP-422/425, 266/533 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 8 RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- USB 2.0 Host
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- LCM display and keypad for HMI
- Ready-to-run Linux / WinCE 5.0 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

Windows CE 5.0

Overview

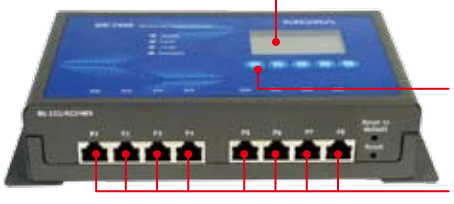
UC-7420/UC-7410 products are RISC-based ready-to-run embedded computers for your embedded applications. The UC-7420/UC-7410 embedded computers feature eight

RS-232/422/485 serial ports, a PCMCIA interface for wireless LAN communication, CompactFlash, and USB ports for mass storage disk expansion, making UC-7420/7410 ideal for your embedded applications.

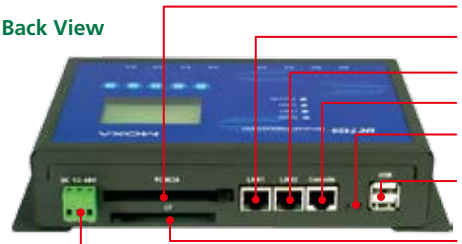
The pre-installed Linux/WinCE OS provides an open, standard software operating system for your software program development. This means that software written for a desktop PC can be easily ported to the UC-7420/UC-7410 platform by using an open, common development tool, without needing to modify the software code. All the software you develop for your own applications can be stored on the UC-7420/UC-7410's Flash memory. Using the UC-7420/UC-7410, you can easily build a control system with a distributed architecture, based on embedded technologies.

UC-7420 Appearance

Front View

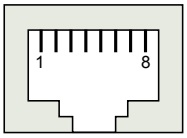


Back View

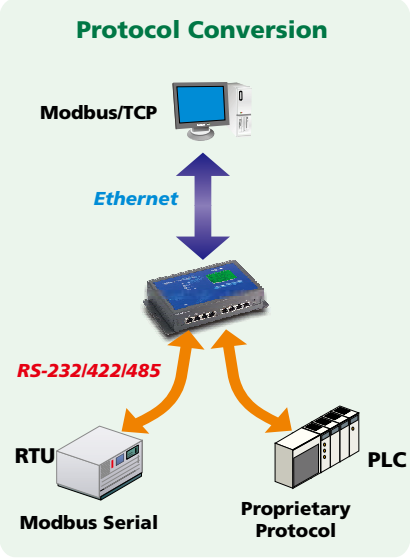


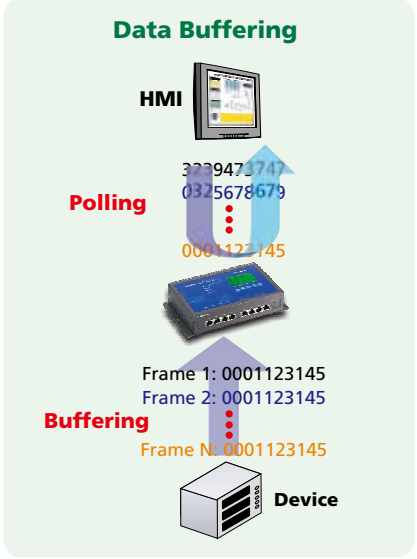
Pin Assignment

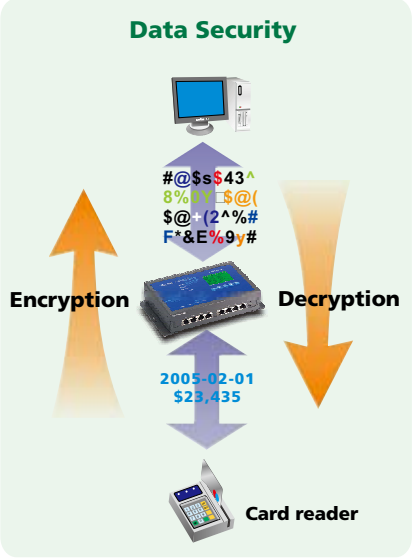
Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---







Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz (Plus Version)
Intel XScale IXP-422 266 MHz

DRAM: 128 MB onboard

Flash: 32 MB onboard

PCMCIA: Cardbus card and 16-bit PCMCIA 2.1/ JEIDA 4.2 card (UC-7420 only)

Storage Expansion: CompactFlash x 1 with full function (UC-7420 only)

USB: USB 2.0 Host x 2 (UC-7420 only), USB 1.1 Client x 1

LCM: 128 x 64 dot Graphics Mode

Keypad: 5 membrane buttons

Console Port: RS-232 x 1, RJ45, supports PPP

Other: RTC, buzzer, Watchdog Timer

OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

LAN: 10/100 Mbps x 2, RJ45

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: RS-232/422/485 x 8, software-selectable, RJ45

Protection: Built-in 15 KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1, Console x 1

LAN: 10M/100M x 2

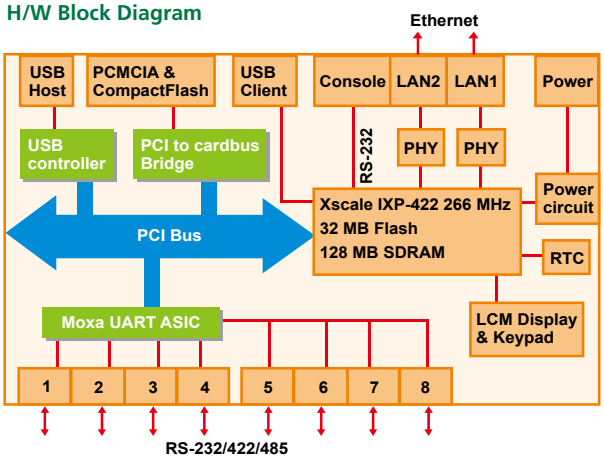
Serial: TxD/RxD x 8

Power Requirements

Power Input: 12 to 48 VDC

Power Consumption: 890 mA @ 12 VDC, 12W (UC-7420), 830 mA @ 12 VDC, 10W (UC-7410)

H/W Block Diagram



Mechanical

Dimensions (WxDxH): 197 x 125 x 44 mm (7.8 x 4.9 x 1.7 in)

Weight: 875 g (UC-7420), 810 g (UC-7410)

Construction Material: SECC sheet metal, 1 mm

Mounting: Wall-mounting, DIN-Rail

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Anti-Vibration: 1G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.

Anti-Shock: 5G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00

Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10 (Plus Version)
2.4.18

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon

ftpd: FTP server daemon

sshd: Secure shell server

Apache: Web server daemon, supports PHP and XML

MySQL: Database Server and Client

OpenVPN: Virtual private network service manager

iptables: Firewall service manager

pppd: dial in/out over serial port daemon & PPPoE

snmpd: snmpd agent daemon

inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library

Linux Tool Chain: Gcc, Glibc, GDB

Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)

UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

PCMCIA CardBus (supports 802.11b/g wireless LAN Card), CF Card, Watchdog Timer (WDT), UART, RTC, Buzzer, LCM, Keypad

MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

File Systems: TFAT (on-board flash)

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

Supporting Services and Daemons

Telnet Server: Allows remote administration through a standard telnet client

FTP Server: Used for transferring files to and from remote computer systems via a network.

Web Server (httpd): WinCE IIS, offer ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, support Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

MOXA WinCE 5.0 SDK

C Libraries and Run-times

Component Services (COM and DCOM)

Microsoft Foundation Classes (MFC)

Microsoft® .NET Compact Framework

XML, including DOM, XQL, XPATH, XSLT, SAX2

SOAP Toolkit

Winsock 2.2

Device Drivers:

PCMCIA CardBus, CF Card, USB (supports USB flash disk), Watchdog Timer (WDT) API, UART, RTC, Buzzer, LCM, Keypad

Ordering Information

UC-7410-LX Plus NEW
RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, Linux 2.6

UC-7410-LX
RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, Linux 2.4

UC-7410-CE
RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, WinCE 5.0

UC-7420-LX Plus NEW
RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.6

UC-7420-LX
RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.4

UC-7420-CE
RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, WinCE 5.0

All items include

- 1 UC-7420 or UC-7410
- Quick Installation Guide
- Wall-mounting Kit
- DIN-Rail Mounting Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

UC-7408

RISC-based Data Acquisition Embedded Computer with 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash

Features

- Intel XScale IXP-422/425, 266/533 MHz processor
- 128 MB RAM on-board, 32 MB flash disk
- 8 RS-232/422/485 serial ports
- 8-ch digital input and 8-ch digital output
- Dual 10/100 Mbps Ethernet for network redundancy
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- Ready-to-run Linux / WinCE 5.0 platform
- DIN-rail or wall-mount installation
- Robust, fanless design

Overview

UC-7408 is a data acquisition embedded computer for embedded applications. UC-7408 features eight RS-232/422/485 serial ports, 8-ch digital input, 8-ch digital output, dual 10/100, a PCMCIA interface for wireless LAN communication and a CompactFlash slot for mass storage disk expansion, making UC-7408 ideal for your embedded applications.

In addition to the 8 RS-232/422/485 serial ports, UC-7408 features an additional 8 digital input and 8 digital output channels for acquiring data through serial ports, and for I/O event handling, making it suitable as a data acquisition solution.

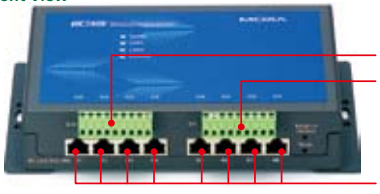
The digital I/O feature of UC-7408 provides users with the convenience of connecting their digital devices to a front-end embedded computer. UC-7408 can be used for on/off event handling by reading the state change of the digital input signal. In addition, output signals from external digital devices can be imported into UC-7408's digital input channels. UC-7408 can be programmed to take immediate action when it detects a change in the signal state.

The digital output channels on UC-7408 can connect to devices and trigger digital output signals to control external digital devices. Including the digital I/O feature means that MOXA's embedded computers support both data acquisition and protocol conversion via the RS-232/422/485 serial ports, and simple I/O control with the digital I/O signals.

Choose a pre-installed open standard Linux OS or the commonly used WinCE OS. This means that software written for a desktop PC can be easily ported to the UC-7408 platform by using a common compiler, without needing to modify the software code. All the software you develop for your own applications can be stored on UC-7408's Flash memory.

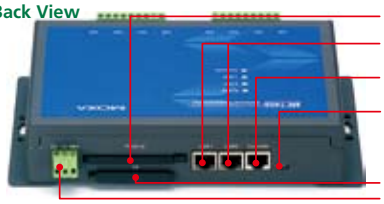
UC-7408 Appearance

Front View



8-ch Digital Output
8-ch Digital Input
RS-232/422/485 x 8, RJ45

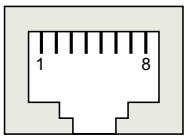
Back View



PCMCIA X 1
10/100 Mbps Ethernet x 2
RS-232 PPP/Console
USB 1.1 Client x 1
mini B connector
CF x 1
12 to 48 VDC Power Input

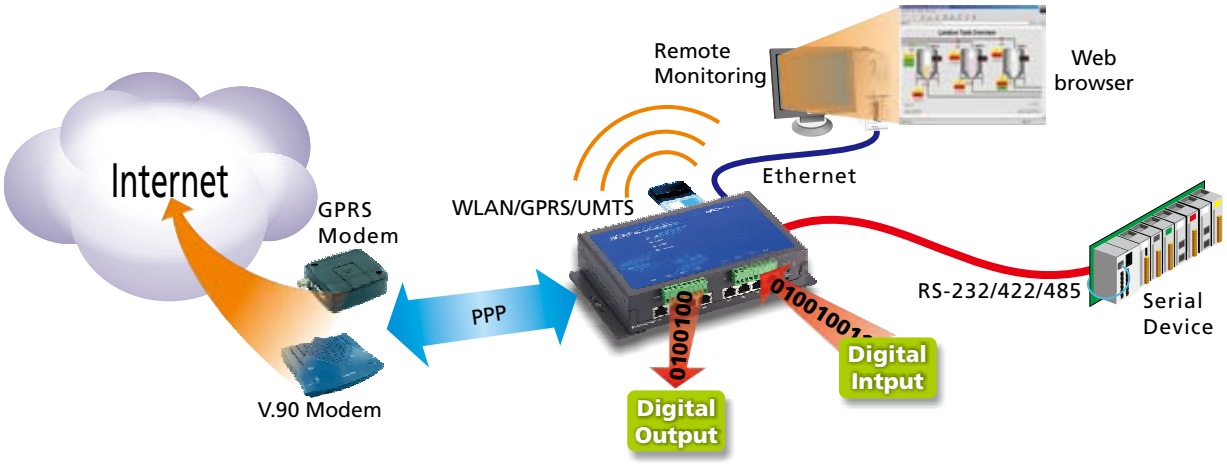
Pin Assignment

Serial Port, RJ45 Connector



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Typical Application



Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz (Plus Version)
Intel XScale IXP-422 266 MHz
DRAM: 128 MB onboard
Flash: 32 MB onboard
DI/DO: DI x 8, DO x 8, TTL (3.3V)
PCMCIA: Cardbus card and 16-bit PCMCIA 2.1/ JEIDA 4.2 card
Storage Expansion: CompactFlash x 1 with full function
Console Port: RS-232 x 1, RJ45, support PPP
Other: RTC, buzzer, Watchdog Timer
OS: Built-in embedded Linux or Windows CE 5.0

Network Communication

LAN: 10/100Mbps x 2, RJ45
Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: RS-232/422/485 x 8, software-selectable, RJ45
Protection: Built-in 15 KV ESD protection for all signals
Data bits: 5, 6, 7, 8
Stop bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDCTM
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1, Console x 1
LAN: 10M/100M x 2
Serial: TxD/RxD x 8

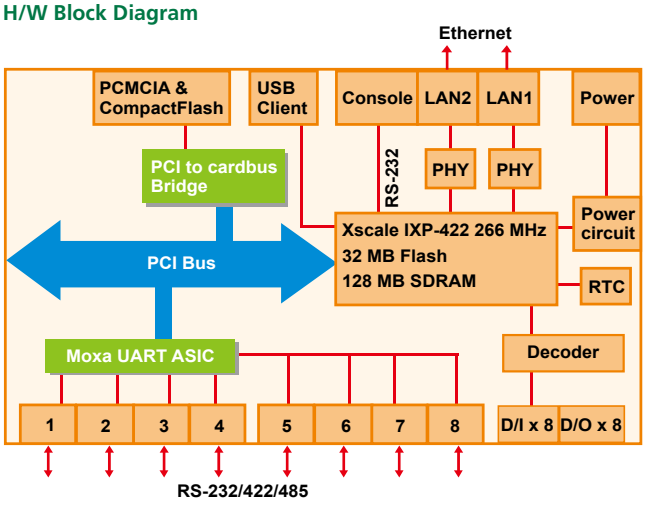
Power Requirements

Power Input: 12 to 48 VDC
Power Consumption: 628 mA @ 12 VDC, 8W

Mechanical

Dimensions (WxDxH): 197 x 125 x 44 mm (7.8 x 4.9 x 1.7 in)
Weight: 870 g
Construction Material: SECC sheet metal, 1 mm

H/W Block Diagram



Mounting: Wall-mounting, DIN-Rail

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH
Anti-Vibration: 1G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.
Anti-Shock: 5G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10 (Plus Version)
2.4.18

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE

File System: JFFS2 (on-board flash)

System Utilities: bash, busybox, tinylogin, telnet, ftp, scp

Supporting Services and Daemons:

telnetd: Telnet Server daemon
ftpd: FTP server daemon
sshd: Secure shell server
Apache: Web server daemon, support PHP and XML
MySQL: Database Server and Client
OpenVPN: Virtual private network service manager
iptables: Firewall service manager
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program

Application Development Environment:

MOXA Linux API Library
Linux Tool Chain: Gcc, Glibc, GDB
Windows Tool Chain: Gcc, Glibc,
Insight (Windows-based source level debug utility)
UC Finder: UC's LAN IP broadcast search utility for Windows and Linux

Device Drivers:

PCMCIA CardBus (supports 802.11b/g wireless LAN Card), CF Card Watchdog Timer (WDT), UART, RTC, Buzzer
MOXA 2G NPort Real TTY Driver

Windows CE 5.0

Boot Loader: Redboot

Protocol Stacks: TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

File Systems: TFAT (on-board flash)

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

Supporting Services and Daemons:

Telent Server: Allows remote administration through a standard telnet client
FTP Server: Used for transferring files to and from remote computer systems ver a network.
Web Server (httpd): WinCE IIS, offer ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.
Dial-up Networking Service: RAS client API and PPP, support Extensible Authentication Protocol (EAP) and RAS scripting

Application Development Environment:

MOXA WinCE 5.0 SDK
C Libraries and Run-times
Component Services (COM and DCOM)
Microsoft Foundation Classes (MFC)
Microsoft® .NET Compact Framework
XML, including DOM, XQL, XPATH, XSLT, SAX2
SOAP Toolkit
Winsock 2.2

Device Drivers:

PCMCIA CardBus, CF Card, Watchdog Timer (WDT) API, UART, RTC, Buzzer

Ordering Information

UC-7408-LX Plus NEW

RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.6

UC-7408-LX

RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.4

UC-7408-CE

RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, WinCE 5.0

All items include

- 1 UC-7408
- Quick Installation Guide
- Wall-mounting Kit
- DIN-Rail Mounting Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

UC-7402

RISC-based Ready-to-Run Embedded Network Computer with Dual LANs, PCMCIA, CompactFlash

Features

- Intel XScale IXP-422/425, 266/533 MHz processor
- On-board 128 MB RAM, 32 MB flash disk
- Dual 10/100 Mbps Ethernet for network redundancy
- CompactFlash socket for storage expansion
- PCMCIA supports WLAN, GPRS, UMTS, HSDPA
- Ready-to-run Linux platform
- Hardware level data encryption engine supports AES, DES and 3DES
- SSL, SSH, TLS security function
- Built-in firewall and VPN function
- Apache web server supports PHP and XML
- DIN-rail or wall-mount installation

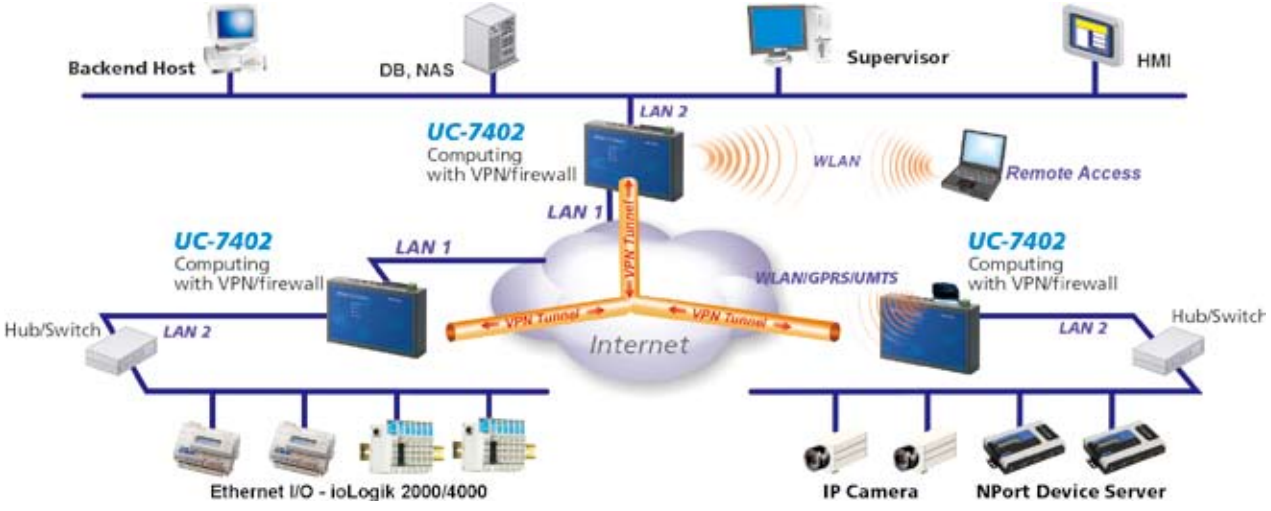
Overview

MOXA UC-7402 is a web server embedded network computer that features dual 10/100 Mbps Ethernet ports, a PCMCIA interface for wireless LAN communication, and CompactFlash for mass storage disk expansion. UC-7402 is an excellent choice for embedded network applications and diverse M2M solutions.

UC-7402 is a rugged, compact embedded computer that is designed for industrial applications. Two key design features are the low power consumption and fanless operation, which together ensure greater reliability and longer system life. The communication oriented functionality includes both hardware and software. In fact, the software design is especially ideal for network communication based applications, such as connecting to machines and other devices over a network. UC-7402 provides real-time data access, a secure network gateway, and a VPN router. The built-in web server allows UC-7402 to be used as a web-enabled gateway to let users access monitoring and control functions from anywhere on the network.

Since UC-7402 provides WLAN 802.11b/g connectivity, both wired and wireless networks can be integrated into a system communication medium. Users can capture real-time data from the network and aggregate it into the UC-7402 embedded web server, and convert data into various standard data formats. Data can be buffered and then distributed to the proper web browser.

Typical Application



Hardware Specifications

System

CPU: Intel XScale IXP-425 533 MHz (Plus Version)
Intel XScale IXP-422 266 MHz
DRAM: 128 MB onboard
Flash: 32 MB onboard
PCMCIA: Cardbus card and 16-bit PCMCIA 2.1/ JEIDA 4.2 card
Storage Expansion: CompactFlash x 1 with full function
Console Port: RS-232 x 1, RJ45, PPP supported
Other: RTC, buzzer, Watchdog Timer
OS: Built-in embedded Linux

Network Communication

LAN: 10/100 Mbps x 2, RJ45
Protection: Built-in 1.5 KV magnetic isolation protection

LEDs

System: Ready x 1, Console x 1
LAN: 10M/100M x 2

Power Requirements

Power Input: 12 to 48 VDC
Power Consumption: 360 mA @ 12 VDC, 7W

Mechanical

Dimensions (WxDxH): 197 x 125 x 44 mm (7.8 x 4.9 x 1.7 in)
Weight: 830 g
Construction Material: SECC sheet metal, 1 mm
Mounting: Wall-mounting, DIN-Rail

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH
Anti-Vibration: 1G @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis.
Anti-Shock: 5G @ IEC-68-2-27, half sine wave, 30 ms

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

Software Specifications

Linux

Kernel Version: 2.6.10 (Plus Version)
2.4.18
Boot Loader: Redboot
Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
File System: JFFS2 (on-board flash)
System Utilities: bash, busybox, tinylogin, telnet, ftp, scp
Application Development Environment
MOXA Linux API Library
Linux Tool Chain: Gcc, Glibc, GDB
Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)
UC Finder: UC's LAN IP broadcast search utility for Windows and Linux
Supporting Services and Daemons:
telnetd: Telnet Server daemon
ftpd: FTP server daemon
sshd: Secure shell server
Apache: Web server daemon, supports PHP and XML
MySQL: Database Server and Client
OpenVPN: Virtual private network service manager
iptables: Firewall service manager
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program
Device Drivers:
PCMCIA CardBus (supports 802.11b/g wireless LAN Card), CF Card, Watchdog Timer (WDT), RTC, Buzzer
MOXA 2G NPort Real TTY Driver

Ordering Information

UC-7402-LX Plus NEW
RISC-based Ready-to-Run Embedded Network Computer with IXP-425, Dual LANs, PCMCIA, CompactFlash, Linux 2.6
UC-7402-LX
RISC-based Ready-to-Run Embedded Network Computer with IXP-422, Dual LANs, PCMCIA, CompactFlash, Linux 2.4

All items include

- 1 UC-7402
- Quick Installation Guide
- Wall-mounting Kit
- DIN-Rail Mounting Kit
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console port cable: CBL-RJ45F9-150 8-pin RJ45 to female DB9 cable, 150 cm
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

UC-7124/7122

New

Mini RISC-based Ready-to-Run Embedded Computer with Dual LANs, 4/2 Serial Ports, SD, USB

Wide Temperature

Features

- Cirrus Logic EP9302 ARM9 32-bit 200 MHz processor
- On-board 16 MB RAM, 16 MB flash disk
- 4/2 software-selectable RS-232/422/485 serial ports
- Serial port speed from 50 bps to 921.6 Kbps supporting ANY BAUDRATE
- Dual 10/100 Mbps Ethernet for network redundancy
- SD socket for storage expansion supported
- Built-in RTC, buzzer, Watchdog Timer
- Ready-to-run WinCE 5.0 platform
- -40 to 75°C wide temperature model available

Microsoft Windows CE 5.0 RoHS CE FC

Overview

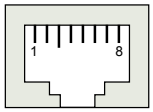
The UC-7124/7122 embedded computers come with 2 or 4 RS-232/422/485 serial ports and dual 10/100 Mbps Ethernet LAN ports to provide users with a versatile communication platform, making these RISC-based embedded computers ideal for your embedded applications.

The UC-7124/7122 embedded computers use the Cirrus Logic EP9302 ARM9 200 MHz RISC CPU. Unlike the X86 CPU, which uses a CISC design, the ARM9's RISC design architecture and modern semiconductor technology provide the UC-7124/7122 with a powerful computing engine and communication functions, but without generating too much heat. Moreover, the built-in 16 MB NOR Flash ROM and 16 MB SDRAM give you enough storage capacity to run applications on the UC-7124/7122. The additional SD socket provides the flexibility for storage expansion, and the dual LAN ports built into the ARM9 make the UC-7124/7122 ideal communication platforms for simple data acquisition and protocol conversion applications. In addition, the RS-232/422/485 serial ports allow you to connect a variety of serial devices. Taken together, these features ensure that the UC-7124/7122 embedded computers are convenient and powerful central control units for industrial applications, such as data acquisition, remote device control and monitoring, and protocol conversion.

The pre-installed WinCE 5.0 operating system provides a common Windows-based software operating system for software program development. This means that software written in Visual C/C++, VB and .NET for desktop PCs is easily ported to the UC-7124/7122 by using a general programming tool such as Microsoft Embedded Visual C++ or Microsoft Visual Studio 2005. You will not need to spend time modifying existing software code, and the operating system, device drivers, and your own software can all be stored in the UC-7124/7122's Flash memory.

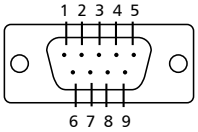
Pin Assignment

Serial Port, RJ45 Connector for UC-7124



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

Serial Port, DB9 Connector for UC-7122



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Hardware Specifications

System

CPU: Cirrus EP9302 ARM9 CPU, 200 MHz
DRAM: 16 MB onboard (32/64 MB for ODM)
Flash: 16 MB onboard (32 MB for ODM)
Storage Expansion: SD socket x 1 for storage expansion, compliant to SD 1.0 standard
USB: USB 2.0 full speed Host (OHCI) x 1
Console/Debugging Port: RS-232 x 1 (TxD, RxD, GND), 4-pin header output
Others: RTC, buzzer, Watchdog Timer
OS: Built-in WinCE 5.0

Network Communication

LAN: Auto-sensing 10/100Mbps x 2, RJ45
Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: Software-selectable RS-232/422/485 x 2 for UC-7122, DB9 male connector
RS-232/422/485 x 4 for UC-7124, software-selectable, RJ45
RS-232 signals: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND
RS-422 signals: TxD+, TxD-, RxD+, RxD-, GND
4-wire RS-485 signals: TxD+, TxD-, RxD+, RxD-, GND
2-wire RS-485 signals: Data+, Data-, GND
Protection: Built-in 15 KV ESD protection for all signals
Data bits: 5, 6, 7, 8
Stop bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1, SD x 1
LAN: 10M/Link x 2 (on connector), 100M/Link x 2 (on connector)
Serial: TxD x 2/4, RxD x 2/4 (2 LEDs for UC-7122, 4 LEDs for UC-7124)

Power Requirements

Power Input: 12 to 48 VDC, 3-pin terminal block (V+, V-, SG)

Mechanical

Dimensions (W x D x H): 77 x 111 x 26 mm (without wall-mount ear)
Weight: 190 g (UC-7122), 200 g (UC-7124)
Construction Material: aluminum, 1 mm
Mounting: Wall-mounting, DIN-rail

Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH
-40 to 75°C (-40 to 167°F) is optional for -T models

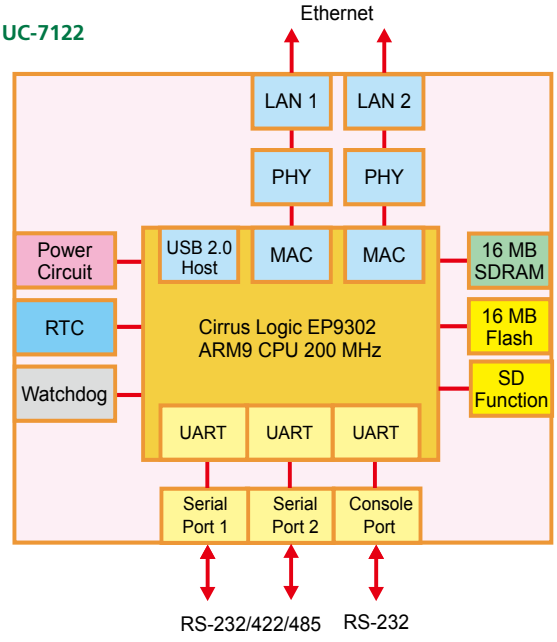
Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH
-40 to 85°C (-40 to 185°F) is optional for -T models

Regulatory Approvals

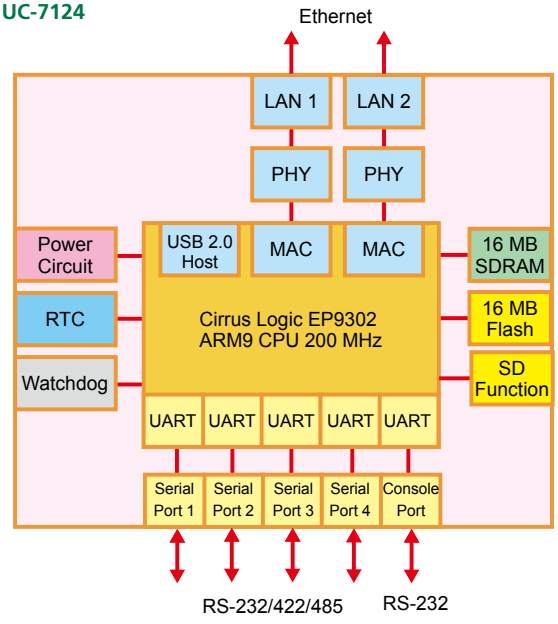
EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

H/W Block Diagram

UC-7122

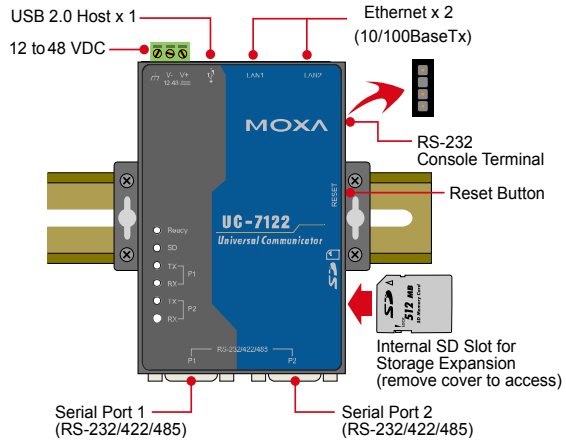


UC-7124

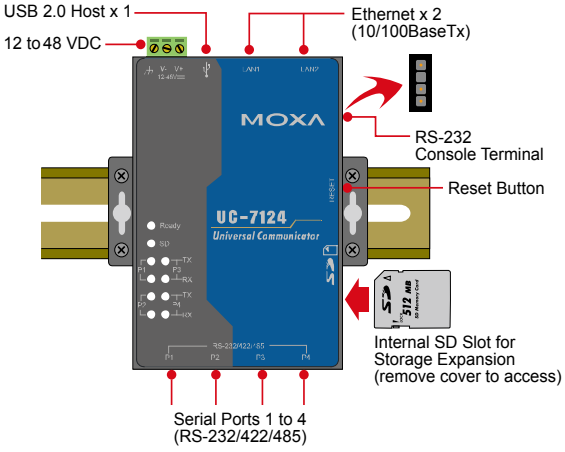


Appearance

UC-7122

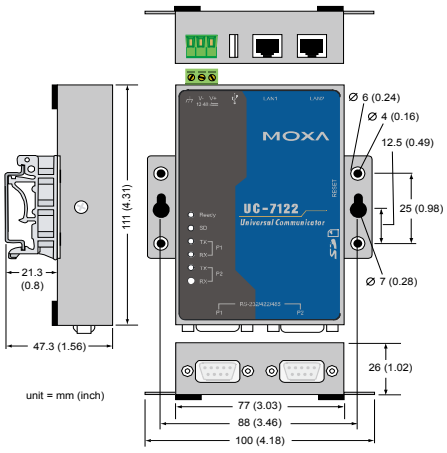


UC-7124

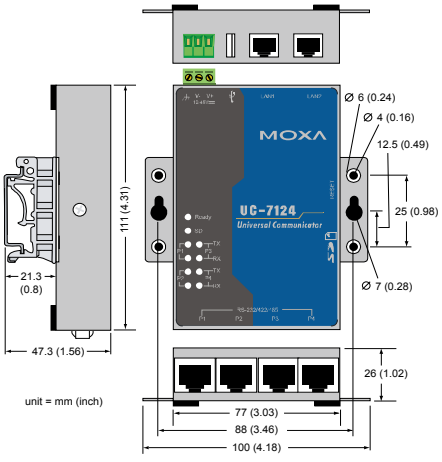


Dimensions

UC-7122



UC-7124



Ordering Information

Standard Operating Temperature Models (-10 to 60°C)

UC-7122-CE New

Mini RISC-based Ready-to-Run Embedded Computer with Dual LANs, 2 Serial Ports, SD, USB, WinCE 5.0

UC-7124-CE New

Mini RISC-based Ready-to-Run Embedded Computer with Dual LANs, 4 Serial Ports, SD, USB, WinCE 5.0

Wide Operating Temperature Models (-40 to 75°C)

UC-7122-T-CE New

Mini RISC-based Ready-to-Run Embedded Computer with Dual LANs, 2 Serial Ports, SD, USB, WinCE 5.0, Wide Temperature

UC-7124-T-CE New

Mini RISC-based Ready-to-Run Embedded Computer with Dual LANs, 4 Serial Ports, SD, USB, WinCE 5.0, Wide Temperature

All items include

- 1 UC-7124 or UC-7122
- Quick Installation Guide
- Documentation & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-4PINDB9F-150 4-pin pin-header to female DB9 cable, 150 cm
- Serial Port Cable: CBL-RJ45M9-150 8-pin RJ45 to male DB9 cable, 150 cm (UC-7124 only)
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

Optional Accessories

- DK35A: DIN-Rail Mounting kit (35mm)

UC-7124/7122 Series Product Comparison Chart

Model Name	UC-7122 UC-7122-T	UC-7124 UC-7124-T
CPU	Cirrus Logic EP9302 ARM9 CPU 200 MHz	Cirrus Logic EP9302 ARM9 CPU 200 MHz
RAM	16 MB	16 MB
Flash	16 MB	16 MB
OS	WinCE 5.0	WinCE 5.0
Network Interface	10/100 Mbps x 2	10/100 Mbps x 2
Serial Port	RS-232/422/485 x 2 DB9 Male Connector	RS-232/422/485 x 4 RJ45 Connector
Serial Protection	15 KV ESD for all signals	
Data Bits	1, 1.5, 2	
Stop Bits	5, 6, 7, 8	
Parity	none, even, odd, space, mark	
Flow Control	RTS/CT, XON/XOFF, RS-485 ADD C™	
Speed	50 bps to 921.6 Kbps, supports ANY BAUDRAT E	
Serial Console	RS-232 x 1 Pin-header Connector	RS-232 x 1 Pin-header Connector
Storage Expansion	SD x 1	SD x 1
USB	USB 2.0 Full Speed Host (OHCI) x 1	USB 2.0 Full Speed Host (OHCI) x 1
Real Time Clock	Yes	Yes
Buzzer Signal	Yes	Yes
Watchdog Timer	Yes	Yes
Reset Signal	Reset to Default x 1	Reset to Default x 1
Power Input	12 to 48 VDC	12 to 48 VDC
Power Consumption	Less than 4 Watts	Less than 4 Watts
Dimensions (W x D x H) (mm)	77 x 111 x 26	77 x 111 x 26
Weight (g)	190	200
Operating Temperature	-10 to 60°C (14 to 141°F), 5 to 95%RH -40 to 75°C (-40 to 167°F) is optional (for -T model)	
Storage Temperature	-20 to 80°C (-4 to 176°F), 5 to 95%RH -40 to 85°C(-40 to 185°F) is optional (for -T model)	
Regulatory Approvals	EMC: FCC Class A, CE Class A, Safety: UL, cUL, TÜV	
Warranty	5 years	5 years

UC-7112/UC-7110

Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD

Wide Temperature

Features

- MOXA ART ARM9 32-bit 192 MHz processor
- 32/16 MB RAM (about 12 MB of user programmable space)
- 16/8 MB Flash ROM (about 4 MB of user programmable space)
- Dual 10/100 Mbps Ethernet for network redundancy
- 2 software-selectable RS-232/422/485 ports
- Serial port speed from 50 bps to 921.6 Kbps, supporting ANY BAUDRATE
- SD socket for storage expansion supported
- Built-in RTC, Buzzer
- Built-in Linux Kernel 2.6 platform
- -40 to 75°C wide temperature models available

Overview

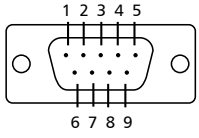
UC-7112/UC-7110 Mini RISC-based Communication Platforms are ideal for your embedded applications. UC-7112/UC-7110 comes with two RS-232/422/485 serial ports and dual 10/100 Mbps Ethernet LAN ports to provide users with a versatile communication platform.

UC-7112/UC-7110 uses the ARM9 RISC CPU. Unlike the X86 CPU, which uses a CISC design, the ARM9's RISC design architecture and modern semiconductor technology provide UC-7112/UC-7110 with a powerful computing engine and communication functions, but without generating too much heat. The built-in 8 MB NOR Flash ROM and 16 MB SDRAM give you enough storage capacity, and an additional SD socket provides the user with flexible storage expansion to run applications. The dual LAN ports built into the ARM9 make UC-7112/UC-7110 an ideal communication platform for some of the more simple data acquisition and protocol conversion applications, and the two RS-232/422/485 serial ports allow you to connect a variety of serial devices.

The pre-installed µClinux operating system provides an open software operating system for software program development. This means that software written for desktop PCs is easily ported to UC-7112/UC-7110 by using a GNU cross complier, so that you will not need to spend time modifying existing software code. The operating system, device drivers, and your own software can all be stored in the UC-7112/UC-7110's Flash memory.

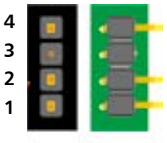
Pin Assignment

Male DB9



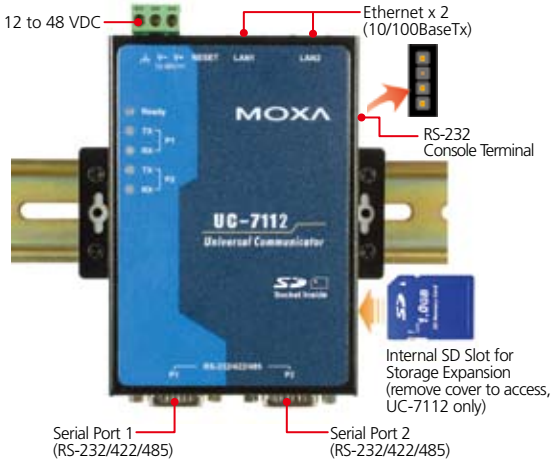
PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console port

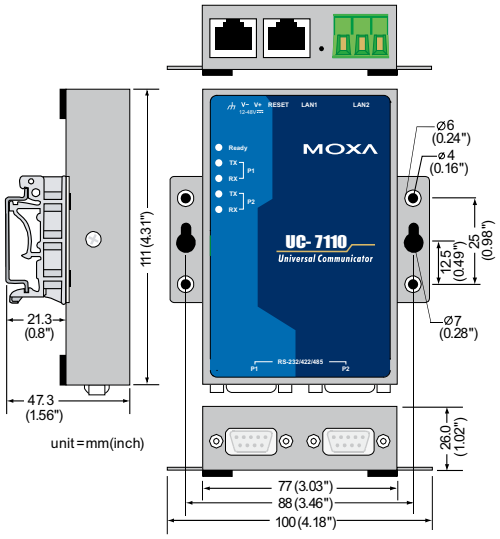


PIN	
1	TxD
2	RxD
3	NC
4	GND

Appearance



Dimensions



Hardware Specifications

System

CPU: Moxa ART ARM9 32-bit RISC CPU, 192 MHz
DRAM: 16 MB/32 MB(Plus Version) onboard (12 MB for user programmable space)
Flash: 8 MB/16 MB (Plus Version) onboard (4 MB for user programmable space)
Storage Expansion: SD socket x 1 (UC-7112 only)
Console Port: RS-232, 3-wire (TxD, RxD, GND), pin-header
Other: RTC, buzzer, Watchdog Timer
OS: Built-in µClinux, Linux

Network Communication

LAN: 10/100 Mbps x 2, RJ45

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: RS-232/422/485 x 2, software-selectable, DB9
Protection: Built-in 15 KV ESD protection for all signals
Data bits: 5, 6, 7, 8
Stop bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™
Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1
LAN: 10M/Link x 2, 100M/Link x 2 (on connector)
Serial: TxD x 2, RxD x 2

Power Requirements

Power Input: 12 to 48 VDC
Power Consumption: 340 mA @ 12 VDC, 4.5W

Mechanical

Dimensions (WxDxH): 77 x 111 x 26 mm
(3.03 x 4.37 x 1.02 in)
Weight: 190 g

Construction Material: Aluminum, 1 mm
Mounting: Wall-mounting, DIN-Rail

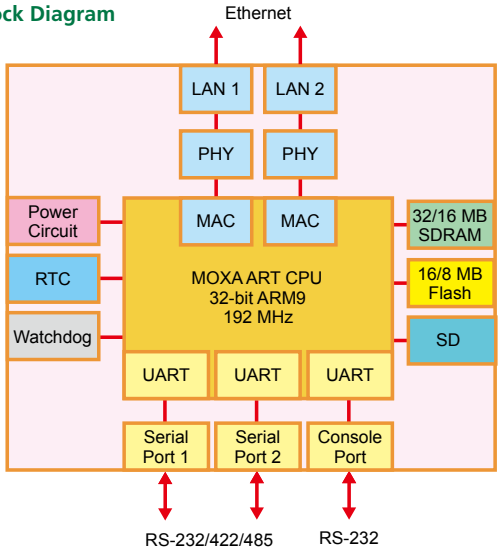
Environmental

Operating Temperature:
-10 to 60°C (14 to 140°F), 5 to 95% RH
-40 to 75°C (-40 to 167°F) for -T models
Storage Temperature:
-20 to 80°C (-4 to 176°F), 5 to 95% RH
-40 to 85°C (-40 to 185°F) for -T models

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024
Safety: TÜV: IEC/EN60950
UL/cUL: UL60950, CAN/CSA-C22.2 No. 60950-00
Warranty: 5 years

H/W Block Diagram



Software Specifications

µClinux

Kernel Version: 2.6.19
Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V2c, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
File System: JFFS2 (on-board flash)
System Utilities: msh, busybox, tinylogin, telnet, ftp
Supporting Services and Daemons:
telnetd: Telnet Server daemon
ftpd: FTP server daemon
Boa: Web server daemon
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program
Application Development Environment:
MOXA Linux API Library
Linux Tool Chain:
Arm-elf-gcc: C/C++ PC Cross Compiler
µClibc: POSIX Standard Library
UC Finder: UC's LAN IP broadcast search utility for Windows and Linux
Device Drivers:
UART, RTC, Buzzer, SD Card

Linux (Plus Version)

Kernel Version: 2.6.9
Boot Loader: Redboot
Protocol Stacks: TCP, UDP, IPv4, SNMP V1/V3, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/ 2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
File System: JFFS2 (on-board flash)
System Utilities: bash, busybox, tinylogin, telnet, ftp, scp
Supporting Services and Daemons:
telnetd: Telnet Server daemon
ftpd: FTP server daemon
sshd: Secure shell server
Apache: Web server daemon, supports PHP and XML
OpenVPN: Virtual private network service manager
iptables: Firewall service manager
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program
Application Development Environment:
MOXA Linux API Library
Linux Tool Chain: Gcc, Glibc, GDB
Windows Tool Chain: Gcc, Glibc, Insight (Windows-based source level debug utility)
UC Finder: UC's LAN IP broadcast search utility for Windows and Linux
Device Drivers:
Watchdog Timer (WDT), UART, RTC, Buzzer, SD card

All items include

- 1 UC-7112 or UC-7110
- Quick Installation Guide
- Document & Software CD
- Ethernet Cable: RJ45 to RJ45 cross-over cable, 100 cm
- Console Port Cable: CBL-4PINDB9F-150 4-pin pin-header to female DB9 cable, 150 cm
- Universal Power Adaptor (includes terminal block to power jack converter)
- Product Warranty Statement

Optional Accessories

DK35A: DIN-Rail Mounting kit (35 mm)

Ordering Information

Standard Operating Temperature Models (-10 to 60°C)

UC-7110-LX
Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS

UC-7112-LX Plus NEW
Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, Linux 2.6

UC-7112-LX
Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS

Wide Operating Temperature Models (-40 to 75°C)

UC-7110-T-LX
Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, Wide Temperature

Embedded Module Series

RISC-based Ready-to-Run Embedded Core Module with 2/4 Serial Ports, Dual LANs, SD, µClinux

Overview

MOXA's Embedded Module Series is designed for system integration and software development in industrial applications. This mini-size core module can be easily integrated into systems for implementation in related industrial applications, such as data acquisition and control systems.

The embedded modules come with a seamless µClinux operating system that accelerates the development process, helping you reduce your time to market. You can build applications that have a powerful serial communication capability, but which are still small in size. MOXA's embedded modules are well-suited for control systems that use a distributed, embedded architecture, such as the systems used by gas stations, vending machines, and ticketing machines.

Industrial-grade Module for Industrial Applications

MOXA's Embedded Module Series includes 2- and 4-port software-selectable RS-232/422/485 serial ports for attaching different types of industrial devices. In addition, the MOXA ART ARM9 32-bit 192 MHz processor promises a powerful performance for system operation. The two auto-sensing 10/100 Mbps Ethernet ports default to the higher 100M speed when available, and ensure network connectivity redundancy. In addition, the GPIO pins provide ample design flexibility, giving you the freedom to develop the features your customers need. SD signals are supported for external SD socket connections for storage expansion. These features are better suited for today's equipment. R&D engineers can spend less effort developing related software, and you can essentially reduce the cost of building the entire system. In addition, a wide-temperature model that works reliably in a temperature range of -40 to 75 is also available for the EM-1220 embedded module, ensuring a reliable solution for any harsh environment.

Short Time to Market

MOXA's embedded modules offer the ready-to-run µClinux operating system that helps you minimize the effort required for system development. In addition, the compact design provides all the components you need to get your products to market in no time—CPU, RAM, Flash, and even the more complex components, such as an OS Kernel, drivers, and middleware.

Easy-to-Use Development Kit

A Development Kit used to evaluate MOXA's embedded modules can be ordered separately. The kit includes an embedded module, an embedded module carrier board, relevant documents, a software CD, and the items needed to set up a basic layout. The kit makes it easy for users to evaluate the functionality of the embedded modules. You can develop and integrate the specific hardware on the module in advance to make the embedded modules completely compatible with industrial systems and applications.

Embedded Module Series Product Comparison Chart

Model Name	EM-1220 EM-1220-T	EM-1240
CPU	MOXA ART ARM9 32-bit 192 MHz	MOXA ART ARM9 32-bit 192 MHz
RAM	16 MB	16 MB
Flash	8 MB	8 MB
OS	μClinux	μClinux
Network Interface	10/100 Mbps x 2	10/100 Mbps x 2
Serial Port	RS-232/422/485 x 2	RS-232/422/485 x 4
Serial Protection	15 KV ESD for all signals	
Data Bits	1, 1.5, 2	
Stop Bits	5, 6, 7, 8	
Parity	none, even, odd, space, mark	
Flow Control	RTS/CT, XON/XOFF, RS-485 ADDC™	
Speed	50 bps to 921.6 Kbps, supports ANY BAUDRATE	
Serial Console	RS-232 x 1, Tx, Rx, GND	RS-232 x 1, full signal, supports PPP
Storage Expansion	SD signals supported for external SD socket connection	
GPIO	8*	10*
Real Time Clock	Yes	Yes
Buzzer Signal	Yes	Yes
Watchdog Timer	Yes	Yes
Reset Signal	Reset x 1	Reset x 1
Power Input	Accept external 3.3 VDC through pin header	Accept external 5 VDC through pin header
Dimensions (W x D) (mm)	Embedded Module: 80 x 50 Development Kit: 117 x 70	Embedded Module: 90 x 80 Developmnt Kit: 177 x 115
Weight	Embedded Module: 40 g Developmnt Kit: 120 g	Embedded Module: 50 g Developmnt Kit: 200 g
Operating Temperature	-10 to 60°C (14 to 141°F), 5 to 95%RH -40 to 75°C(14 to 167°F) for wide temperature model (EM-1220-T)	
Storage Temperature	-20 to 80°C (-4 to 176°F), 5 to 95%RH -40 to 85°C(14 to 185°F) for wide temperature model (EM-1220-T)	
Regulatory Approvals	EMC: FCC Class A, CE Class A	
Warranty	5 years	5 years

*When the SD function is enabled, the GPIO signals will be disabled.

**When the GPIO function is enabled, the SD signals will be disabled.

EM-1220

New

RISC-based Ready-to-Run Embedded Core Module with 2 Serial Ports, Dual LANs, SD, µClinux

Wide Temperature

Features

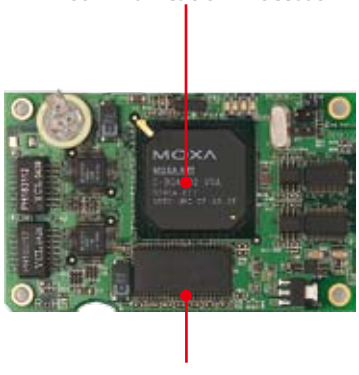
- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 16 MB RAM, 8 MB flash disk
- 2 software-selectable RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- RS-232 serial console port supports PPP
- Ready-to-run µClinux Kernel 2.6 platform
- SD signals supported for external SD socket connection
- Built-in RTC, buzzer
- 8 GPIOs reserved for system integration
- Credit card size design for easy integration at any field site
- Full-function development kit for quick evaluation and application development
- -40 to 75°C wide temperature model available

Overview

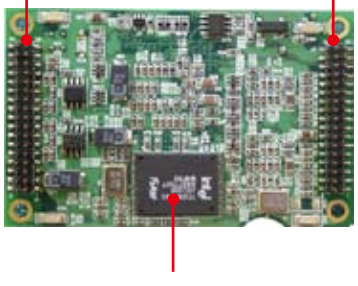
The EM-1220 embedded module features 2 RS-232/422/485 serial ports, dual Ethernet ports, and an SD socket for external storage expansion. The module has a compact design that can be easily integrated with industrial applications, such as gas stations, vending machines, and ticketing machines, and offers a powerful serial communication capability for better system integration. Programmers will find that the pre-installed, ready-to-run µClinux platform and the full-function development kit make it easy to develop software and build a reliable communication base for industrial automation applications. In addition, the "wide temperature" EM-1220-T model is also available to provide a reliable solution for any harsh environment.

Appearance

Top View



Bottom View



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit 192 MHz processor

DRAM: 16 MB onboard (optional 32 MB)

Flash: 8 MB onboard (optional 16 MB)

Storage Expansion: SD signals for external Secure Digital (SD) socket connection

Console Port: RS-232 x 1, full signal, supports PPP

Other: RTC, buzzer, Watchdog Timer

OS: Built-in embedded µClinux Kernel 2.6.9

Network Communication

LAN: Auto-sensing 10/100 Mbps x 2

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: software-selectable RS-232/422/485 x 2

Protection: Built-in 15 KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC™

Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

Software Specifications

Kernel Version: µClinux Kernel 2.6.9

Protocol Stack: ARP, ICMP, IPV4, TCP, UDP, FTP, Telnet, SNMP V1/V2c, HTTP, CHAP, PAP, DHCP, NTP, NFS V2/V3, SMTP, Telnet,PPP, PPPoE

File System: JFFS2 for Kernel, Root File System (Read Only) and User Director (Read / Write)

Msh: Minix shell command

pppd: Dial in/out over serial port daemon, including PPPoE (Point-to-Point over Ethernet)

Snmpd: SNMP V1 Agent daemon

Busybox: Linux normal command utility

Tinylogin: login and user manager utility

Telnetd: Telnet server daemon

Telnet: Telnet client daemon

Inetd: TCP server manager program

ftpd: FTP server program

ftp: FTP client program

Boa: Web server daemon

ntpdate: Network Time Protocol client utility

Tool Chain: (supports both Linux and Windows)

Arm-elf-gcc: C/C++ PC Cross Compiler,

µClibc: POSIX standard C library

UC Finder: UC's LAN IP broadcast searching utility for Windows and Linux

LEDs

System: Ready x 1

LAN: 10M/Link x 2, 100M/Link x 2

Serial: TxD x 4, RxD x 4

Power Requirements

Power Input: External 5 VDC through pin header

Mechanical

Dimensions (W x L):

EM-1220: 80 x 50 mm

EM-1220 Development Kit: 117 x 70 mm

Weight: EM-1240: 40 g, EM-1240-Development Kit: 120 g

Module Interface: Two 2 x 28 pin-headers; pitch: 1.27 x 1.27 mm

Environmental

Operating Temperature:

-10 to 60°C (14 to 140°F), 5 to 95% RH

-40 to 75°C (-40 to 167°F) is optional for EM1220-T model

Storage Temperature:

-20 to 80°C (-4 to 176°F), 5 to 95% RH

-40 to 85°C (-40 to 185°F) is optional for EM-1220-T model

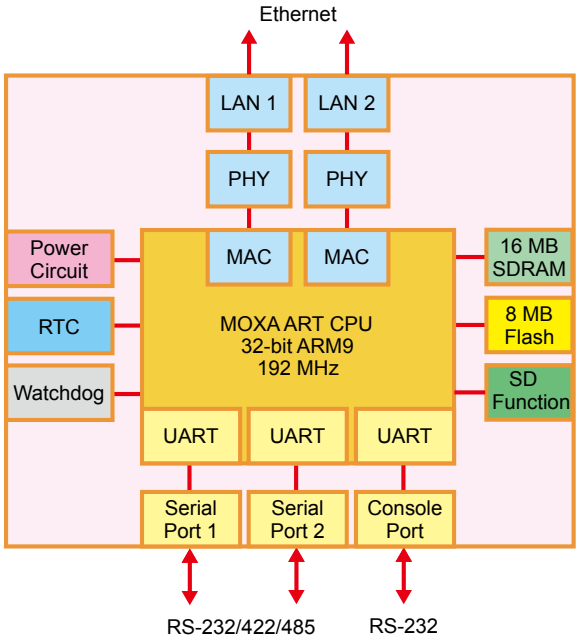
Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A

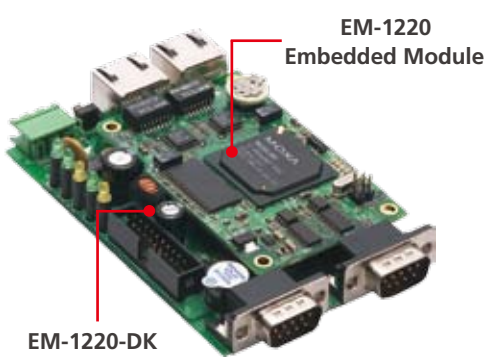
CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

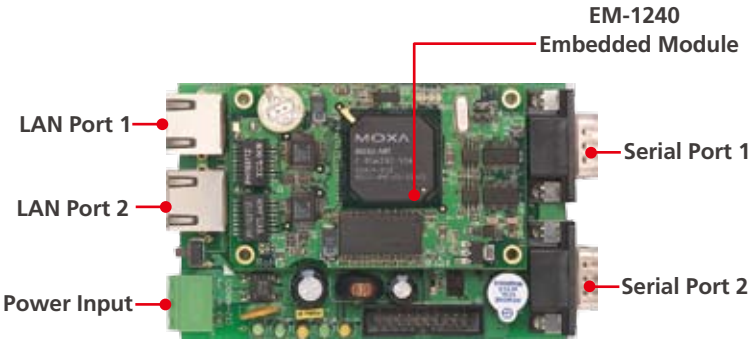
Warranty: 5 years

H/W Block Diagram



Development Kit Appearance

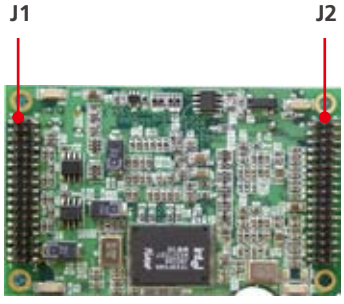




Pin Assignment

J1 Pin Assgiment

Signals	Pin No.	Pin No.	Signals
VCC (5V)	1	2	VCC (5V)
VCC (5V)	3	4	VCC (5V)
GND	5	6	GND
GND	7	8	GND
TxD0 (RS-232)	9	10	RxD0(RS-232)
RTS0	11	12	CTS0
DTR0	13	14	DSR0
RxD1 (RS-232)	15	16	DCD0
CTS1	17	18	TxD1 (RS-232)
DSR1	19	20	RTS1
DCD1	21	22	DTR1
Data-(A)0/ RxD-(A)0	23	24	Data-(A)1/ RxD-(A)1
Data+(B)0/ RxD+(B)/	25	26	Data+(B)1/ RxD+(A)1
Serial LED_Tx0	27	28	Serial LED_Rx0
Serial LED_Tx1	29	30	Serial LED_Rx1
TxDA(-)0	31	32	TxDA(-)1
TxDB(+)0	33	34	TxDB(+)1

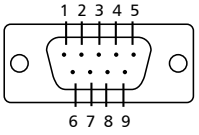


J2 Pin Assgiment

Signals	Pin No.	Pin No.	Signals
Console_RxD	1	2	Console_TxD
Eth1_TxD_out+	3	4	GND
Eth1_TxD_out-	5	6	Eth1_RxD_in+
Eth1_LED_100M	7	8	Eth1_RxD_in-
Eth0_TxD_out+	9	10	Eth1_LED_10M
Eth0_TxD_out-	11	12	Eth0_RxD_in+
Eth0_LED_100M	13	14	Eth0_RxD_in-
GPIO0	15	16	Eth0_LED_10M
GPIO2	17	18	GPIO1
GPIO4	19	20	GPIO3
GPIO6	21	22	GPIO5
GPIO8	23	24	GPIO7
Buzzer	25	26	GPIO9
LED_Ready	27	28	SW Reset
SDA	29	30	SCL
GND	31	32	GND
GND	33	34	GND

Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Items included with the EM-1220 Development Kit

- EM-1220 Embedded Module
- EM-1220-DK, the carrier board for the EM-1240 Development Kit
- Quick Installation Guide
- Document & Software CD
- Cross-over Ethernet cable
- Universal Power Adaptor Set
- Product Warranty Statement

Ordering Information

EM-1220-LX New
RISC-based Ready-to-Run Embedded Core Module with 2 Serial Ports, Dual LANs, SD, µClinux OS

EM-1220-T-LX New
RISC-based Ready-to-Run Embedded Core Module with 2 Serial Ports, Dual LANs, SD, Wide Temperature, µClinux OS

EM-1220-LX Development Kit New
EM-1220-LX Development Kit

EM-1240

New

RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LANs, SD, µClinux

Features

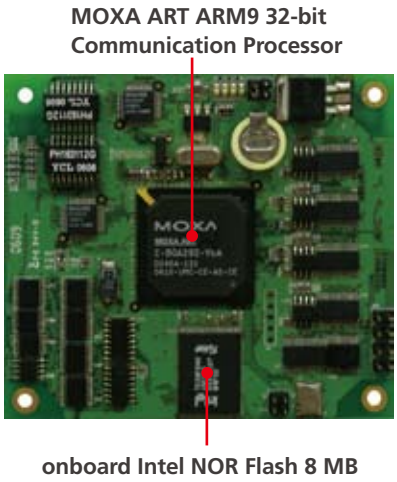
- MOXA ART ARM9 32-bit 192 MHz processor
- On-board 16 MB RAM, 8 MB flash disk
- 4 software-selectable RS-232/422/485 serial ports
- Dual 10/100 Mbps Ethernet for network redundancy
- RS-232 serial console port supports PPP
- Ready-to-run µClinux Kernel 2.6 platform
- SD signals supported for external SD socket connection
- Built-in RTC, buzzer
- 10 GPIOs reserved for system integration
- Full-function development kit for quick evaluation and application development

Overview

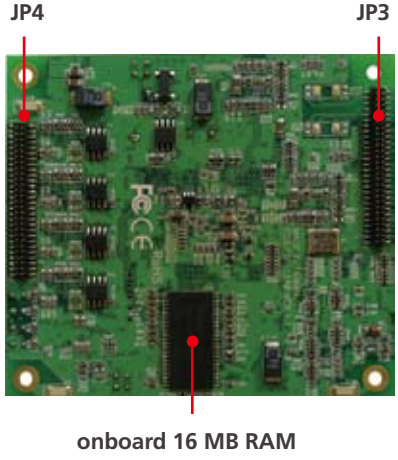
The EM-1240 embedded module features 4 RS-232/422/485 serial ports, dual Ethernet ports and an SD socket for external storage expansion. The module has a compact design that can be easily integrated with related industrial applications, such as gas stations, vending machines, and ticketing machines, and offers a powerful serial communication capability for better system integration. Programmers will find that the pre-installed, ready-to-run µClinux platform and the full-function development kit make it easy to develop software and build a reliable communication base for industrial automation applications.

Appearance

Top View



Bottom View



Hardware Specifications

System

CPU: MOXA ART ARM9 32-bit 192 MHz processor

DRAM: 16 MB onboard (optional 32 MB for ODM)

Flash: 8 MB onboard (optional 16 MB for ODM)

Storage Expansion: SD signals for external Secure Digital (SD) socket connection

Console Port: RS-232 x 1, full signal, supports PPP

Other: RTC, buzzer, Watchdog Timer

OS: Built-in embedded µClinux Kernel 2.6.9

Network Communication

LAN: Auto-sensing 10/100 Mbps x 2

Protection: Built-in 1.5 KV magnetic isolation protection

Serial Communication

Serial Port: RS-232/422/485 x 4, software-selectable

Protection: Built-in 15 KV ESD protection for all signals

Data bits: 5, 6, 7, 8

Stop bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, RS-485 ADDC ™

Speed: 50 bps to 921.6 Kbps, supports Any Baudrate

LEDs

System: Ready x 1

LAN: 10M/Link x 2, 100M/Link x 2

Serial: TxD x 4, RxD x 4

Power Requirements

Power Input: External 5 VDC through pin header

Mechanical

Dimensions (W x L):

EM-1240: 90 x 80 mm

EM-1240 Development Kit: 177 x 115 mm

Weight: EM-1240: 50 g, EM-1240-Development Kit: 200 g

Module Interface: Two 2 x 28 pin-headers; pitch: 1.27 x 1.27 mm

Environmental

Operating Temperature: -10 to 60°C (14 to 140°F), 5 to 95% RH

Storage Temperature: -20 to 80°C (-4 to 176°F), 5 to 95% RH

Regulatory Approvals

EMC: FCC Part 15, CISPR 22 Class A

CE Class A: EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024

Warranty: 5 years

Software Specifications

Kernel Version: µClinux Kernel 2.6.9

Protocol Stack: ARP, ICMP, IPV4, TCP, UDP, FTP, Telnet, SNMP V1/V2c, HTTP, CHAP, PAP, DHCP, NTP, NFS V2/V3, SMTP, Telnet,PPP, PPPoE

File System: JFFS2 for Kernel, Root File System (Read Only) and User Director (Read / Write)

Msh: Minix shell command

pppd: Dial in/out over serial port daemon, including PPPoE (Point-to-Point over Ethernet)

Snmpd: SNMP V1 Agent daemon

Busybox: Linux normal command utility

Tinylogin: login and user manager utility

Telnetd: Telnet server daemon

Telnet: Telnet client daemon

Inetd: TCP server manager program

ftpd: FTP server program

ftp: FTP client program

Boa: Web server daemon

ntpdate: Network Time Protocol client utility

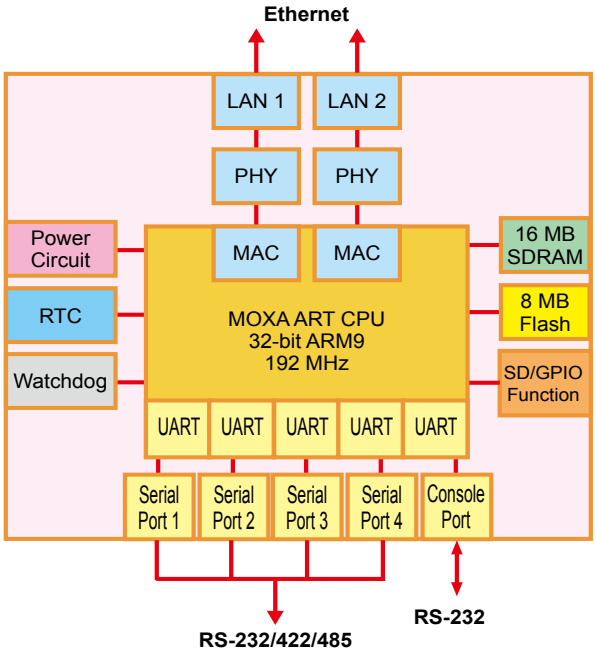
Tool Chain: (supports both Linux and Windows)

Arm-elf-gcc: C/C++ PC Cross Compiler,

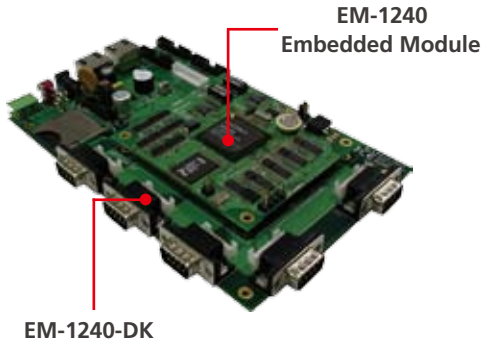
µClibc: POSIX standard C library

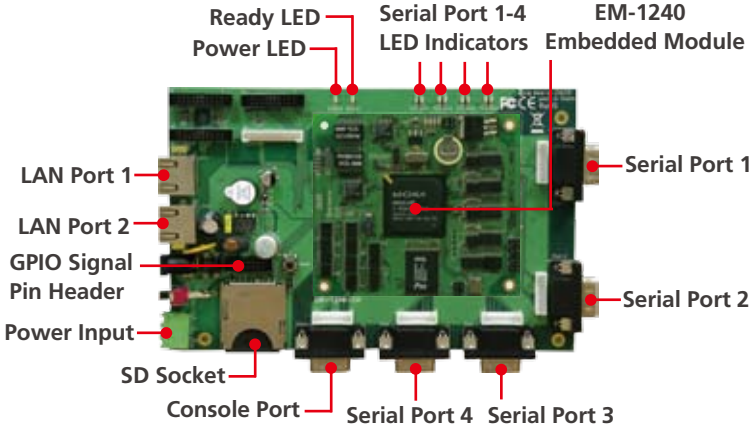
UC Finder: UC's LAN IP broadcast searching utility for Windows and Linux

H/W Block Diagram



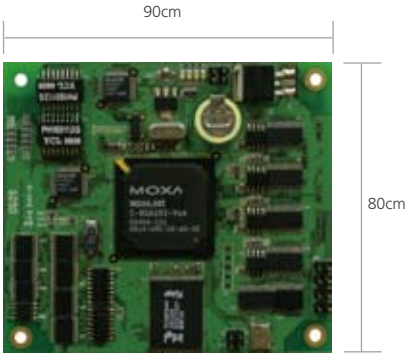
Development Kit Appearance





Dimensions

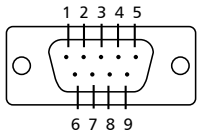
EM-1240 Embedded Module



EM-1240-DK

Pin Assignment

Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Items included with the EM-1240 Development Kit

- EM-1240 Embedded Module
- EM-1240-DK, the carrier board for the EM-1240 Development Kit
- Quick Installation Guide
- Document & Software CD
- Cross-over Ethernet cable
- Female DB9 to Terminal Block converter
- Terminal Block (300V, 15A)
- Universal Power Adaptor Set
- Product Warranty Statement

Ordering Information

EM-1240-LX New
RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LANs, SD, µClinux OS

EM-1240-LX Development Kit New
EM-1240-LX Development Kit

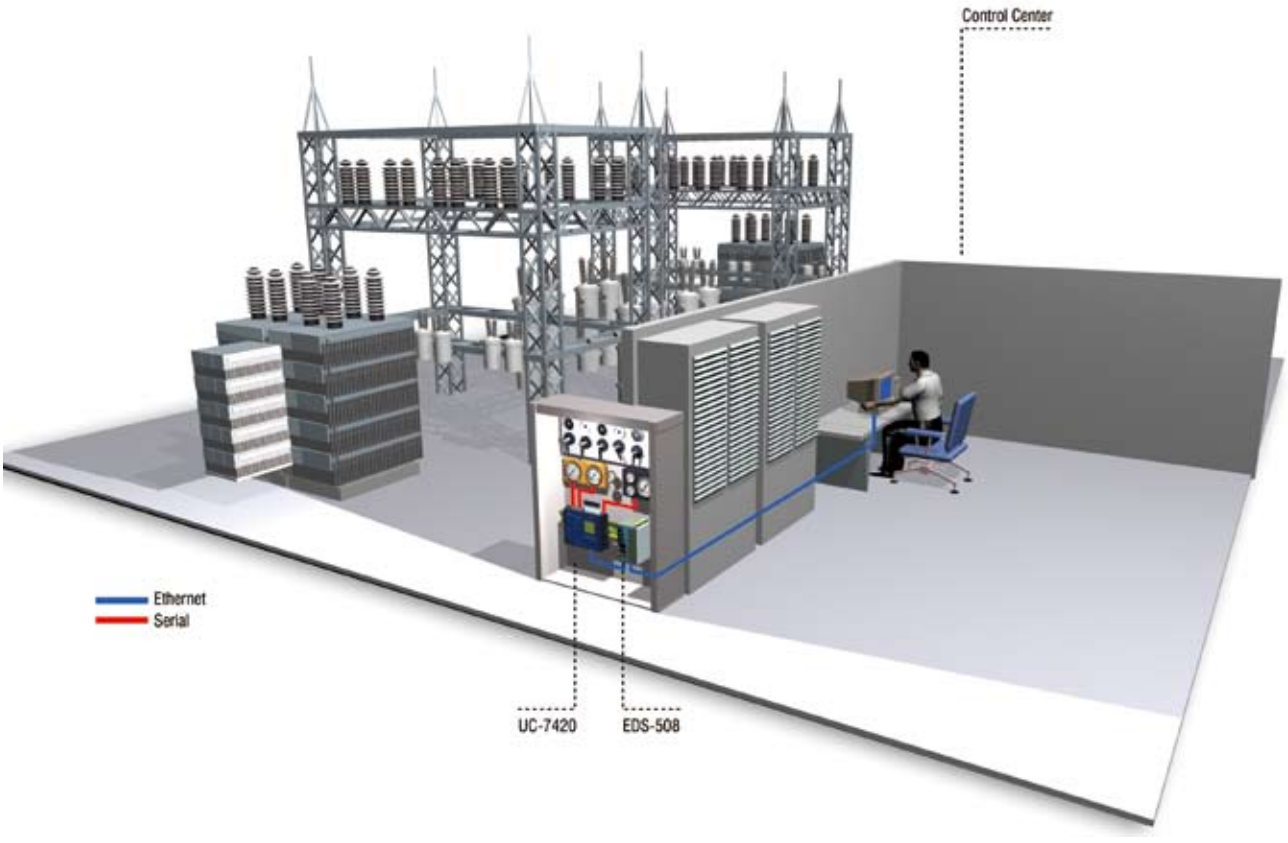
Applications

Power /Electricity Management System

Bringing Reliability and Localized Computing Power to Substation Monitoring Systems

Overview

High-tech power companies around the world are conducting research to identify economical ways to simplify a power plant's automatic protection and warning system, but without sacrificing reliability. One of the main requirements of such a system is a computing device that can handle protocol conversion, data acquisition, monitoring, and control. MOXA's embedded computers are front-end embedded computers that come with 8 RS-232/422/485 serial ports, dual Ethernet ports, wireless LAN capability, and an industrial strength no fan, no hard drive design that suit these requirements exactly. The built-in operating system makes it easy to install software, and the Flash expansion slot lets users add additional memory space as needed. If it is a critical system, the dual Ethernet ports of MOXA embedded computers will be able to provide redundancy. The embedded computer will still be able to communicate with each protection device and with the backup host if the network fails.



Benefits

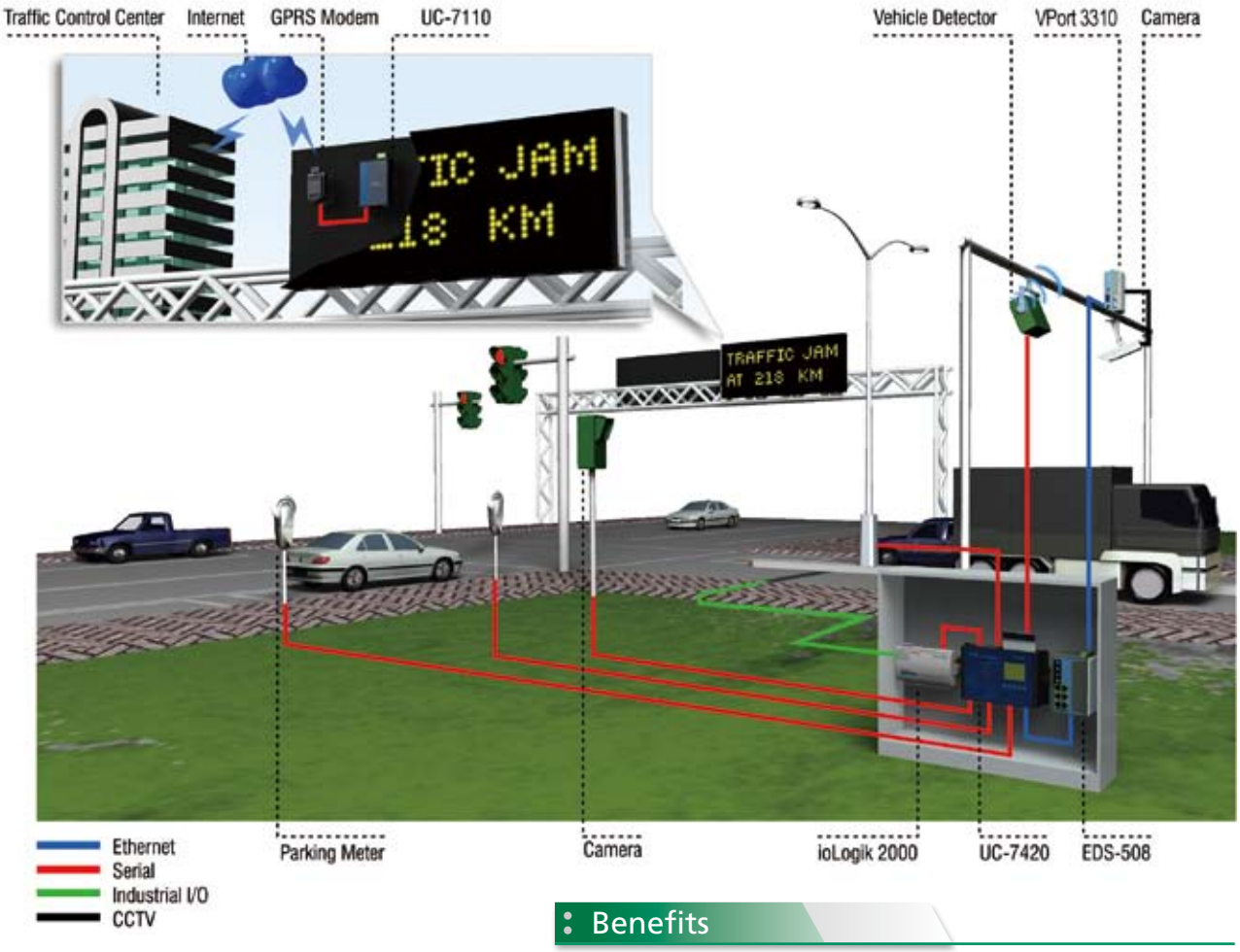
1. No fan, no hard drive design for longer MTBF
2. CompactFlash for data logging
3. Dual-LAN ports for setting up super-redundant systems
4. Programmability facilitates protocol conversion

Intelligent Transportation System

Automatic Monitoring and Control of Traffic

Overview

At busy intersections, IP cameras can be used to allow human operators to gauge the number of cars waiting at the intersection. UC-7420 transmits the images over the Internet from the intersection to a remote monitoring center. Signals that control the status of each traffic light can also be transmitted via UC-7420 to the monitoring center. Another option is to use sensors that automatically detect the parking spaces that are occupied and the spaces that are empty. The sensors can be connected to a UC-7420 via a local RS-485 network. The UC-7420 can be programmed to monitor the sensors continuously, such that when a car leaves a space, this information is relayed to a central computer over an Ethernet LAN, or 802.11 wireless LAN. UC-7420 can also be used to connect the LED displays to a central computer.



Benefits

1. CompactFlash slot for data logging
2. Multiple connection options for greater networking versatility
3. PCMCIA slot for Wireless feature
4. OpenVPN feature for a secure system

POS/ATM/KIOSK

Managed Vending Machines Improve Availability and Reliability

Overview

In public transportation systems, the ticketing system plays a very important role. Huge numbers of citizens need to purchase tickets in order to commute rapidly in an urban area. The requirements of the ticketing system in public transportation systems are reliability and intelligence. In the past, the ticketing system was a standalone machine and always needed a human being to check the status of operation. Nowadays, MOXA's embedded computers, such as UC-7420, can function as the front-end controller of ticketing machines. Price display LCM, receipt printer, control buttons, and coin sensors can be connected to UC-7420. During operation, the UC-7420 can also keep a log history on the CF card. The central office can retrieve sales records and status alarms instantly over the Internet, making it convenient for administrators to monitor the system remotely. A human need not make frequent checks, which can lower the cost of operation and management.

Benefits

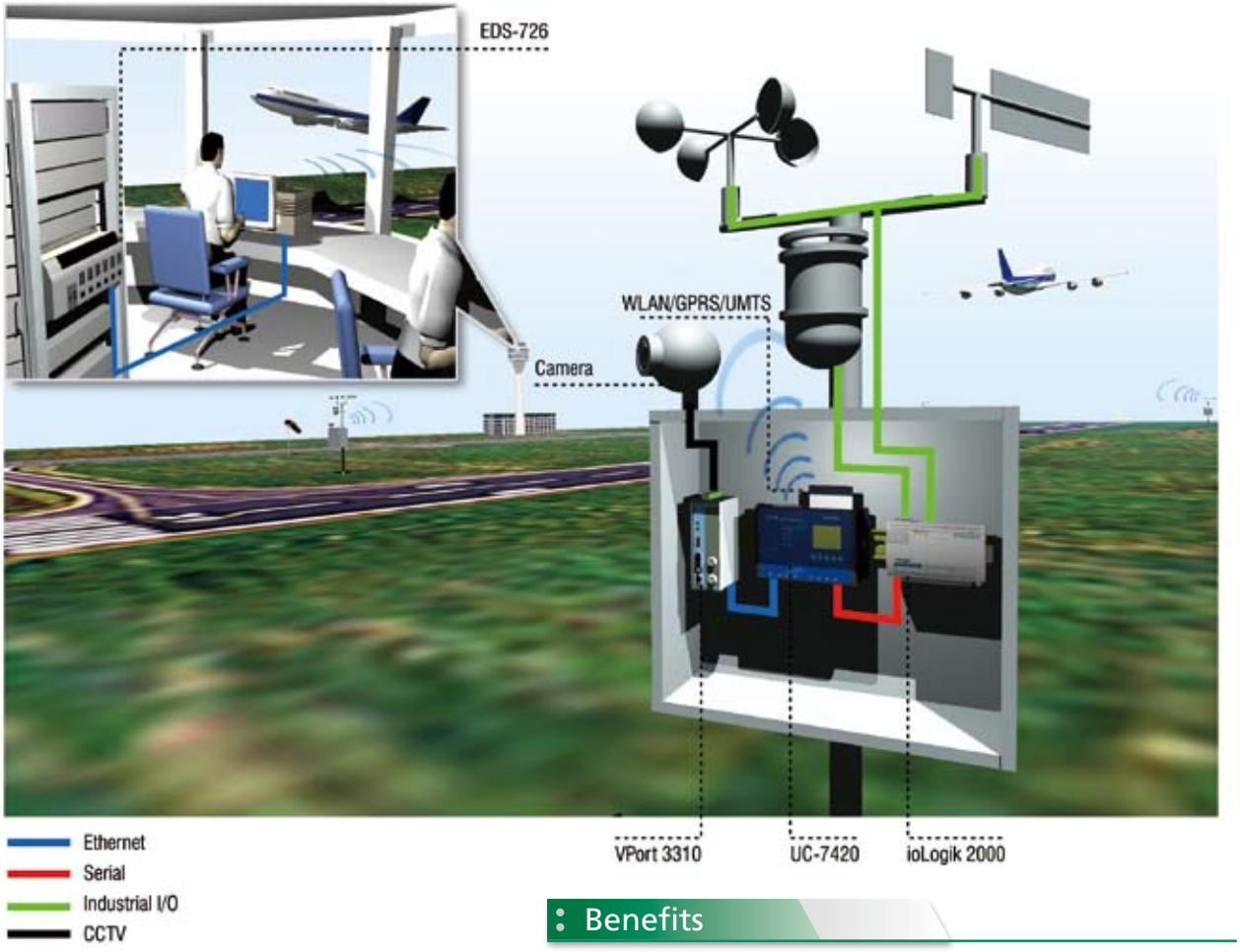
1. No fan, compact size
2. CompactFlash slot for data logging
3. Digital Input & Digital Output signals for controlling I/O devices
4. Built-in IPTables and OpenVPN features for a secure system
5. Data encryption (DES, 3DES, AEC)

Environmental Monitoring System

Monitoring Unmanned Weather Stations

Overview

Unmanned weather stations play an essential role in the effort to analyze and predict the world's ever-changing weather patterns. The unmanned stations collect and store large amounts of weather data and then upload the data at regular intervals to a back-end host for analysis and long-term storage. MOXA Ethernet I/O modules can be connected to UC-7420 through RS-485 to complete data acquisition from front-end sensors. UC-7420 handles protocol conversion after collecting data. In addition, the UC-7420 can do preliminary data processing before uploading data to the central computer. One of the serial ports can also be connected to a V.90 or GPRS modem for PPP connections, and a PCMCIA port is available for installing a wireless LAN card for 802.11b/g networks.



Benefits

1. MOXA total solution: Ethernet I/O module & Embedded Computers
2. No fan, no hard drive design for longer MTBF
3. CompactFlash slot for data logging
4. Maintenance personnel can monitor from a remote location
5. Programmability facilitates protocol conversion

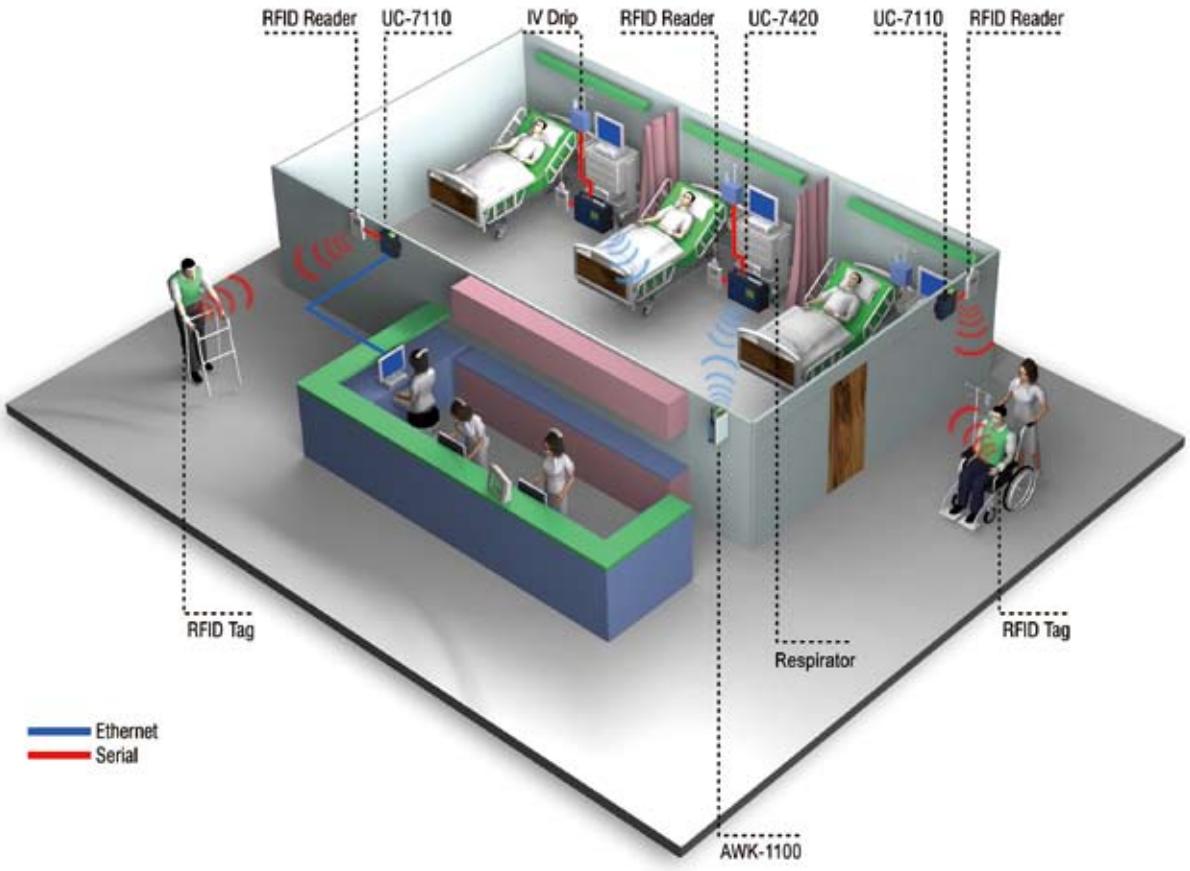
Medical System

Intelligent Solutions for Efficient Monitoring of Nursing Stations

Overview

One of a nurse's most important duties is to keep an eye on the status of patients, and then react quickly when an emergency arises. In the past, nurses made regular rounds of the ward by walking from room to room to administer medication, make sure patients were resting comfortably, and take blood pressure and temperature readings. UC-7420 provides an economical way for nurses to monitor all the patients in their wards at the same time. Since UC is small, it occupies less space and is unobtrusive. UC is used as a front-end embedded computer to collect data from the machines and monitoring equipment in the patient's room. The data is then transferred to the nurse's station, so that the team on-duty can monitor the status of all the patients at the same time.

With RFID readers, MOXA's embedded computers can also perform as front-end controllers to track the position of patients. Once the patients have RFID tags with them, nurses can easily identify where the patient is and respond to any emergency.



Benefits

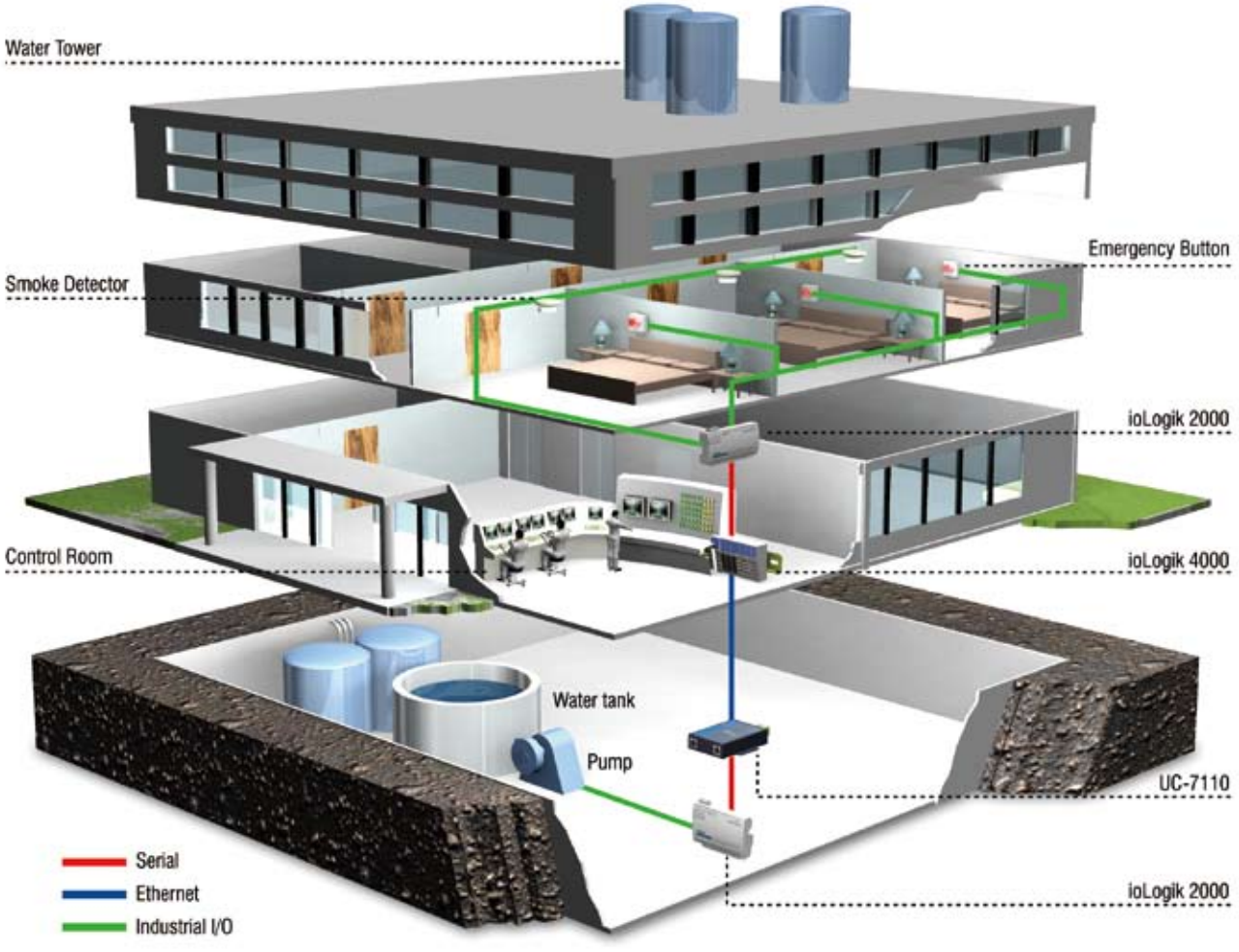
1. No fan, no hard drive design for longer MTBF
2. CompactFlash slot for adding gigabytes of storage space
3. Multiple connection options for greater networking versatility
4. System reduces work load for personnel, and patients can receive better care
5. Instant response ability

Building Automation

Intelligent Buildings for a Convenient Life

Overview

Many front-end applications require Digital Input/Output signals to control serial devices and monitor status from I/O devices. UC-7408's built-in Apache web server allows you to access custom web pages to monitor and control front-end serial and I/O devices. With UC-7408, remote monitoring and control of your facility can be done conveniently using the web browser. Whether you are at home, in the office, or anywhere else in the world, you can easily access UC-7408's web pages to monitor and control your facility. The following figure shows a typical architecture that uses UC-7408 front-end computers for an intelligent building application.



Benefits

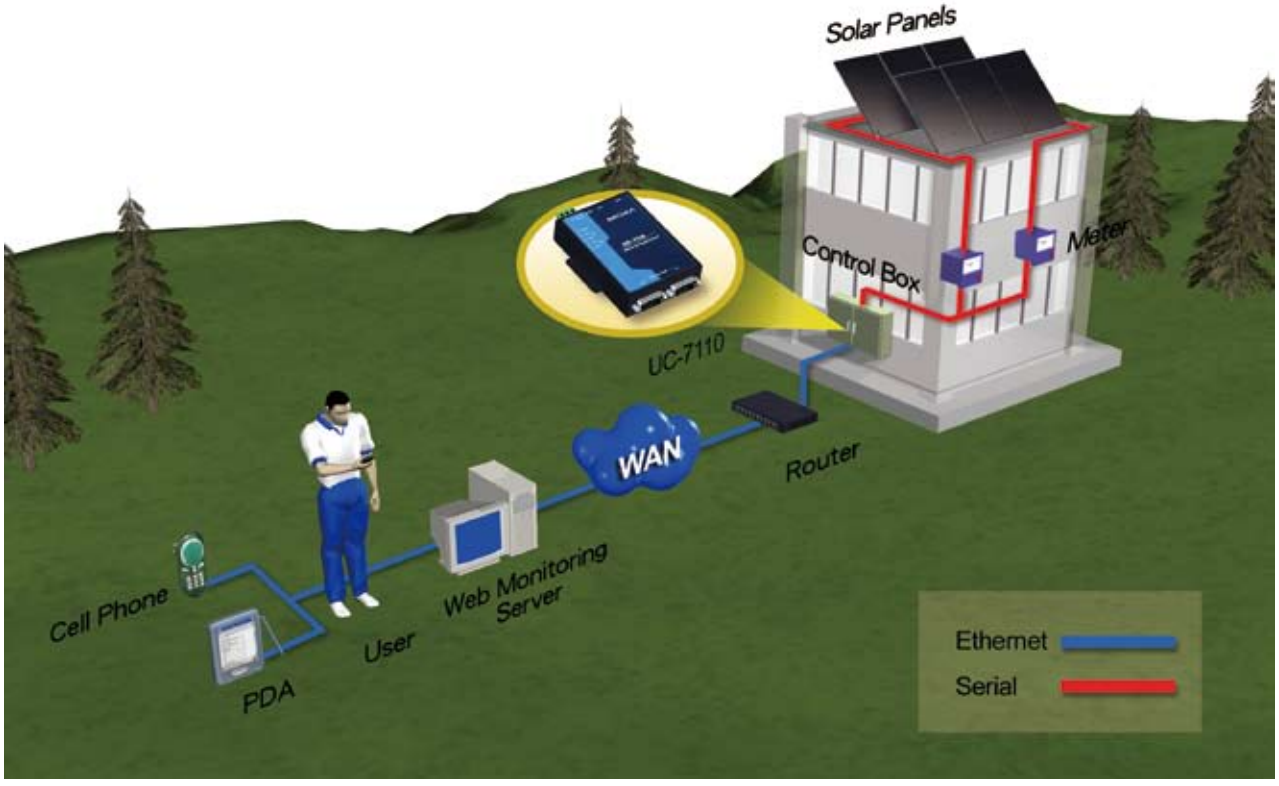
1. Built-in web server for remote monitoring
2. CompactFlash slot for data logging
3. PCMCIA slot for Wireless feature
4. Programmability facilitates protocol conversion

Energy Monitoring and Management System

Remote Monitoring System for Power Meters

Overview

As the world's population continues to increase and new factories spring up all over the place, the problem of providing sufficient electric power has become a big concern. The "solar power solution," which has received much publicity and backing from environmental enthusiasts, is becoming more mainstream. Solar power systems use roof solar panels to absorb the Sun's energy. The purpose of the panels is to convert solar energy into electrical energy, which is sent to a control box via RS-485 serial wires. MOXA UC-7110 offers an economical and resourceful solution to reroute serial data to an existing Ethernet network. The solution provider can embed their own monitoring and protocol conversion software into one of MOXA's UC-7110 embedded computers to handle all power generation and consumption data. As a front-end controller, UC-7110 is compact, and has customizable programming options to convert all serial data received from multiple power meters to the Ethernet packet format.



Benefits

1. Compact size
2. Easy to port existing applications
3. Use the Linux environment to shorten the programming learning curve
4. Fast time to market through existing H/W and S/W design

Ordering Information

ThinkCore W300 Series

Wireless

ThinkCore W311-LX	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 1 Serial Ports, 1 LAN, Linux OS, US and Euro Plug
ThinkCore W311-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 1 Serial Ports, 1 LAN, Linux OS, UK Plug
ThinkCore W311-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 1 Serial Ports, 1 LAN, Linux OS, Australia Plug
ThinkCore W321-LX	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 2 Serial Ports, 1 LAN, SD, Linux OS, US and Euro Plug
ThinkCore W321-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 2 Serial Ports, 1 LAN, SD, Linux OS, UK Plug
ThinkCore W321-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 2 Serial Ports, 1 LAN, SD, Linux OS, Australia Plug
ThinkCore W341-LX	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, US and Euro Plug
ThinkCore W341-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, UK Plug
ThinkCore W341-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with 802.11a/b/g WLAN, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, Australia Plug
ThinkCore W315-LX	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 1 Serial Ports, 1 LAN, Linux OS, US and Euro Plug
ThinkCore W315-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 1 Serial Ports, 1 LAN, Linux OS, UK Plug
ThinkCore W315-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 1 Serial Ports, 1 LAN, Linux OS, Australia Plug
ThinkCore W325-LX	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 2 Serial Ports, 1 LAN, SD, Linux OS, US and Euro Plug
ThinkCore W325-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 2 Serial Ports, 1 LAN, SD, Linux OS, UK Plug
ThinkCore W325-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 2 Serial Ports, 1 LAN, SD, Linux OS, Australia Plug
ThinkCore W345-LX	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, US and Euro Plug
ThinkCore W345-LX (UK Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, UK Plug
ThinkCore W345-LX (SAA Plug)	RISC-based Ready-to-Run Wireless Embedded Computer with GSM/GPRS, 4 Serial Ports, 1 LAN, Relay Output, USB, SD, Linux OS, Australia Plug

Above items include: W311/321/341/315/W325/W345 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

ThinkCore DA-660 Series

Rackmount

ThinkCore DA-660-16-LX	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, Linux OS, US and Euro Plug
ThinkCore DA-660-16-CE	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, WinCE 5.0, US and Euro Plug
ThinkCore DA-660-16-LX (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, Linux OS, UK Plug
ThinkCore DA-660-16-CE (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, WinCE 5.0, UK Plug
ThinkCore DA-660-16-LX (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, Linux OS, Australia Plug
ThinkCore DA-660-16-CE (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, WinCE 5.0, Australia Plug
ThinkCore DA-660-8-LX	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, Linux OS, US and Euro Plug
ThinkCore DA-660-8-CE	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, WinCE 5.0, US and Euro Plug
ThinkCore DA-660-8-LX (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, Linux OS, UK Plug
ThinkCore DA-660-8-CE (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, WinCE 5.0, UK Plug
ThinkCore DA-660-8-LX (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, Linux OS, Australia Plug
ThinkCore DA-660-8-CE (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 8 Serial Ports, Dual LANs, WinCE 5.0, Australia Plug
ThinkCore DA-661-16-LX	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, Linux OS, US Plug
ThinkCore DA-661-16-CE	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, WinCE 5.0 OS, US Plug
ThinkCore DA-661-16-LX (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, Linux OS, UK Plug
ThinkCore DA-661-16-CE (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, WinCE 5.0, UK Plug
ThinkCore DA-661-16-LX (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, Linux OS, Australia Plug
ThinkCore DA-661-16-CE (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual LANs, PCMCIA, CompactFlash, USB, WinCE 5.0, Australia plug
ThinkCore DA-662-16-LX	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS, US Plug
ThinkCore DA-662-16-CE	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, WinCE 5.0, US Plug
ThinkCore DA-662-16-LX (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS, UK Plug
ThinkCore DA-662-16-CE (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, WinCE 5.0, UK Plug
ThinkCore DA-662-16-LX (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS, Australia Plug
ThinkCore DA-662-16-CE (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Quad LANs, PCMCIA, CompactFlash, USB, Linux OS, Australia Plug
ThinkCore DA-663-16-LX	RISC-based 19-inch Rack-mount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, Linux OS, US Plug
ThinkCore DA-663-16-CE	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, WinCE 5.0, US Plug
ThinkCore DA-663-16-LX (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, Linux OS, UK Plug
ThinkCore DA-663-16-CE (UK Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, WinCE 5.0, UK Plug
ThinkCore DA-663-16-LX (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, Linux OS, Australia Plug
ThinkCore DA-663-16-CE (SAA Plug)	RISC-based 19-inch Rackmount Data Acquisition Computer with 16 Serial Ports, Dual Multi-mode Fiber, PCMCIA, CompactFlash, USB, WinCE 5.0, Australia Plug

Above items include: ThinkCore DA-660/661/662/663 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Cord

ThinkCore IA241

Rugged/DIN-Rail	ThinkCore IA241-LX	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, US and Euro Plug
	ThinkCore IA241-T-LX	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, Wide Temperature, US and Euro Plug
	ThinkCore IA241-LX (UK Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, UK Plug
	ThinkCore IA241-T-LX (UK Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, Wide Temperature, UK Plug
	ThinkCore IA241-LX (SAA Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, Australia Plug
	ThinkCore IA241-T-LX (SAA Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, PCMCIA, SD, Linux OS, Wide Temperature, Australia Plug

Above items include: ThinkCore IA241 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

ThinkCore IA240

Rugged/DIN-Rail	ThinkCore IA240-LX	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, US and Euro Plug
	ThinkCore IA240-T-LX	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, Wide Temperature, US and Euro Plug
	ThinkCore IA240-LX (UK Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, UK Plug
	ThinkCore IA240-T-LX (UK Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, Wide Temperature, UK Plug
	ThinkCore IA240-LX (SAA Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, Australia Plug
	ThinkCore IA240-T-LX (SAA Plug)	RISC-based Industrial Ready-to-Run Embedded Computer with 4 Serial Ports, 4 DI Channels, 4 DO Channels, Dual LANs, SD, Linux OS, Wide Temperature, Australia Plug

Above items include: ThinkCore IA240 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

ThinkCore V481

VGA	ThinkCore V481-CE	X86 Rready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CF, USB, Audio, WinCE, US and Euro Plug
	ThinkCore V481-CE (UK Plug)	X86 Rready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CF, USB, Audio, WinCE, UK Plug
	ThinkCore V481-CE (SAA Plug)	X86 Rready-to-Run Embedded Computer with VGA, Dual LANs, 8 Serial Ports, CF, USB, Audio, WinCE, Australia Plug

Above items include: ThinkCore V481 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7420

Box Computers	UC-7420-LX Plus	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.6, US and Euro Plug
	UC-7420-LX	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.4, US and Euro Plug
	UC-7420-CE	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, WinCE 5.0, US and Euro Plug
	UC-7420-LX Plus (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.6, UK Plug
	UC-7420-LX (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.4, UK Plug
	UC-7420-CE (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, WinCE 5.0, UK Plug
	UC-7420-LX Plus (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.6, Australia Plug
	UC-7420-LX (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, Linux 2.4, Australia Plug
	UC-7420-CE (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, USB, PCMCIA, CompactFlash, WinCE 5.0, Australia Plug

Above items include: UC-7420 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7410

Box Computers	UC-7410-LX Plus	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, Linux 2.6, US and Euro Plug
	UC-7410-LX	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, Linux 2.4, US and Euro Plug
	UC-7410-CE	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, WinCE 5.0, US and Euro Plug
	UC-7410-LX Plus (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, Linux 2.6, UK Plug
	UC-7410-LX (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, Linux OS, UK Plug
	UC-7410-CE (UK Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, WinCE 5.0, UK Plug
	UC-7410-LX Plus (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-425, 8 Serial Ports, Dual LANs, Linux 2.6, Australia Plug
	UC-7410-LX (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, Linux OS, Australia Plug
	UC-7410-CE (SAA Plug)	RISC-based Ready-to-Run Embedded Computer with IXP-422, 8 Serial Ports, Dual LANs, WinCE 5.0, Australia Plug

Above items include: UC-7410 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7408

Box Computers	UC-7408-LX Plus	RISC-based Embedded Computer with IXP-425, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, US and Euro Plug
	UC-7408-LX	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.4, US and Euro Plug
	UC-7408-CE	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, WinCE 5.0, US and Euro Plug
	UC-7408-LX Plus (UK Plug)	RISC-based Embedded Computer with IXP-425, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, UK Plug
	UC-7408-LX (UK Plug)	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.4, UK Plug
	UC-7408-CE (UK Plug)	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, WinCE 5.0, UK Plug
	UC-7408-LX Plus (SAA Plug)	RISC-based Embedded Computer with IXP-425, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, Australia Plug
	UC-7408-LX (SAA Plug)	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, Linux 2.4, Australia Plug
	UC-7408-CE (SAA Plug)	RISC-based Embedded Computer with IXP-422, 8 Serial Ports, 8 DI Channels, 8 DO Channels, Dual LANs, PCMCIA, CompactFlash, WinCE 5.0, Australia Plug

Above items include: UC-7408 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

Ordering Information

UC-7402

Box Computer	UC-7402-LX Plus	RISC-based Ready-to-Run Embedded Network Computer with IXP-425, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, US and Euro Plug
	UC-7402-LX	RISC-based Ready-to-Run Embedded Network Computer with IXP-422, Dual LANs, PCMCIA, CompactFlash, Linux 2.4, US and Euro Plug
	UC-7402-LX Plus (UK Plug)	RISC-based Ready-to-Run Embedded Network Computer with IXP-425, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, UK Plug
	UC-7402-LX (UK Plug)	RISC-based Ready-to-Run Embedded Network Computer with Dual LANs, PCMCIA, CompactFlash, Linux 2.4, UK Plug
	UC-7402-LX Plus (SAA Plug)	RISC-based Ready-to-Run Embedded Network Computer with IXP-425, Dual LANs, PCMCIA, CompactFlash, Linux 2.6, Australia Plug
	UC-7402-LX (SAA Plug)	RISC-based Ready-to-Run Embedded Network Computer with Dual LANs, PCMCIA, CompactFlash, Linux 2.4, Australia Plug

Above items include: UC-7402 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7110

Box Computer	UC-7110-LX	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, US and Euro Plug
	UC-7110-T-LX	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, Wide Temperature, US and Euro Plug
	UC-7110-LX (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, UK Plug
	UC-7110-T-LX (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, Wide Temperature, UK Plug
	UC-7110-LX (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, Australia Plug
	UC-7110-T-LX (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, µClinux OS, Wide Temperature, Australia Plug

Above items include: UC-7110 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7112

Box Computer	UC-7112-LX	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, US and Euro Plug
	UC-7112-LX Plus	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, Wide Temperature, US and Euro Plug
	UC-7112-LX (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, UK Plug
	UC-7112-LX Plus (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, Wide Temperature, UK Plug
	UC-7112-LX (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, Australia Plug
	UC-7112-LX Plus (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, µClinux OS, Wide Temperature, Australia Plug

Above items include: UC-7112 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7122

Box Computer	UC-7122-CE	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, US and Euro Plug
	UC-7122-T-CE	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, US and Euro Plug
	UC-7122-CE (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, UK Plug
	UC-7122-T-CE (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, UK Plug
	UC-7122-CE (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Australia Plug
	UC-7122-T-CE (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 2 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, Australia Plug

Above items include: UC-7122 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

UC-7124

Box Computer	UC-7124-CE	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, US and Euro Plug
	UC-7124-T-CE	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, US and Euro Plug
	UC-7124-CE (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, UK Plug
	UC-7124-T-CE (UK Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, UK Plug
	UC-7124-CE (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Australia Plug
	UC-7124-T-CE (SAA Plug)	Mini RISC-based Ready-to-Run Embedded Computer with 4 Serial Ports, Dual LANs, SD, USB, WinCE 5.0, Wide Temperature, Australia Plug

Above items include: UC-7124 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

EM-1220/EM-1240

Embedded Modules	EM-1220-LX	RISC-based Ready-to-Run Embedded Core Module with 2 Serial Ports, Dual LAN, SD, uClinux OS
	EM-1220-T-LX	RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LAN, SD, uClinux OS
	EM-1220-LX Development Kit	EM-1220-LX Development Kit, US and Europe Plug
	EM-1220-LX Development Kit (UK Plug)	EM-1220-LX Development Kit, UK Plug
	EM-1220-LX Development Kit (SAA Plug)	EM-1220-LX Development Kit, Australia Plug
	EM-1240-LX	RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LAN, SD, uClinux OS
	EM-1240-LX Development Kit	EM-1240-LX Development Kit, US and Euro Plug
	EM-1240-LX Development Kit (UK Plug)	EM-1240-LX Development Kit, UK Plug
	EM-1240-LX Development Kit (SAA Plug)	EM-1240-LX Development Kit, Australia Plug

Above items include: EM-1220/EM-1240 x 1 / Quick Installation Guide / Document and Software CD / Mounting Kits / Cables / Power Adaptor

Optional Accessories--1

Adaptors		W300 Series	DA-600 Series	IA241 / IA240	V481
1117000020301	Desktop Adaptor 2-pin, 15W Input Rating: 100 to 240 VAC Output Rating: 1.25A @ 12 VDC	√	–	√	√
Power Cords					
1705000000100	Power Cord, 10A, 250V, 1.8M, Euro Plug	–	√	–	√
1705000000201	Power Cord, 10A, 110V, 1.8M, US Plug	–	√	–	√
1705000000500	Power Cord, 5A, 250V, 1.8M, UK Plug	–	√	–	√
1705000001000	Power Cord, 10A, 250V, 1.8M SAA BLACK	–	√	–	√
9199000000500	Power Cord Australia Plug	√	–	√	√
9199000000600	Power Cord UK Plug	√	–	√	√
9199000000700	Power Cord Euro Plug	√	–	√	√
9199000000800	Power Cord USA Straight Plug	√	–	√	√
9199000000900	Power Jack to TB Power Cable	√	–	√	√
Mounting Kits					
DK-35A	DIN-Rail Mounting Kit, 35 mm	√	–	–	–
1601074009100	DIN-Rail Mounting Kit for UC-7400	–	–	–	√
1601074005100	Wall-mounting Kit for UC-7400	–	–	–	–
1601025046000	L-type Rack-Mount Ear	–	√	–	–
1601003413000	WK/35T Mounting Kit	√	–	–	–
1602020019400	Dual-band Omni-directional antenna, 2.4/5.0/5.2/5.6/5.8 GHz	√	–	–	–
Cables					
1701000001500	UC-7110 console cable, DB9/F-Housing 4-pin	√	–	–	–
1701000003601	Ethernet cross-over cable, RJ45-to-RJ45, 100 cm	√	√	√	√
9199000000100	CBL-RJ45M9-150, 8-pin RJ45 to male DB9 cable, 150 cm	√	√	√	√
9199000000200	CBL-RJ45F9-150, 8-pin RJ45 to female DB9 cable, 150 cm	√	√	√	√

Optional Accessories--2

Adaptors		UC-7400	UC-7112 / UC-7110	UC-7122/UC-7124	EM-1220/EM-1240
1117000020301	Desktop Adaptor 2-pin, 15W Input Rating: 100 to 240 VAC Output Rating: 1.25A @ 12 VDC	√	√	√	√
Power Cords					
1705000000100	Power Cord, 10A, 250V, 1.8M, Euro Plug	–	–	–	√
1705000000200	Power Cord, 10A, 110V, 1.8M, US Plug	–	–	–	√
1705000000500	Power Cord, 5A, 250V, 1.8M, UK Plug	–	–	–	√
1705000001000	Power Cord, 10A, 250V, 1.8M SAA BLACK	–	–	–	√
9199000000500	Power Cord Australia Plug	√	√	√	√
9199000000600	Power Cord UK Plug	√	√	√	√
9199000000700	Power Cord Euro Plug	√	√	√	√
9199000000800	Power Cord USA Straight Plug	√	√	√	√
9199000000900	Power Jack to TB Power Cable	√	√	√	–
Mounting Kits					
DK-35A	DIN-Rail Mounting Kit, 35 mm	–	√	√	–
1601074009000	DIN-Rail Mounting Kit for UC-7400	√	–	–	–
1601074005100	Wall-mounting Kit for UC-7400	√	–	–	–
1601025046000	L-type Rack-Mount Ear	–	–	–	–
Cables					
1701000001500	UC-7110 console cable, DB9/F-Housing 4-pin	–	√	√	–
1701000003601	Ethernet cross-over cable, RJ45-to-RJ45, 100 cm	√	√	√	√
9199000000100	CBL-RJ45M9-150, 8-pin RJ45 to male DB9 cable, 150 cm	√	–	–	–
9199000000200	CBL-RJ45F9-150, 8-pin RJ45 to female DB9 cable, 150 cm	√	–	–	–
9199000090100	DB9F-to-TB, DB9 Femaile to Terminal Block	–	–	–	√

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